Administration of Kurgan Region

National Organization of Green Cross International in Russia

THE THIRD PUBLIC HEARINGS ON CHEMICAL WEAPONS DESTRUCTION

KURGAN
1997

KURGAN Administration of Kurgan Region

National Organization of Green Cross International in Russia

THE THIRD PUBLIC HEARINGS ON CHEMICAL WEAPONS DESTRUCTION

(Kurgan and Shchuch'ye, July 7 - 10, 1997)

Kurgan
Regional Branch of National Organization of Green Cross International

1997

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4. List of adopted statements

OBJECTIVE OF THE HEARINGS

The exchange of information and views between the representatives of the legislative and executive powers of all levels, scientists and specialists, representatives of the public and mass media on safe destruction of CW stored at the storage facility in Planovy of Shchuch'ye Area of Kurgan Region.

Discussion, exchange of views, debates and comparison of different approaches of the scientists and specialists to the proposed technologies for destruction of CW.

Hearing of the reports and accounts on the preliminary results of investigation of the environmental, medical, social and economic situation in Shchuch'ye Area of Kurgan Region, where the chemical weapons destruction facility is planned to be constructed.

The working out and adoption of the concluding document of the Hearings containing the recommendations and ways of solving the problem of safe destruction of CW, international cooperation in solving this urgent problem.

INITIATORS OF THE HEARINGS

The National organization of Green Cross International in Russia and Administration of Kurgan Region acted as the initiators of holding the Third public Hearings in the towns of Kurgan and Shchuch'ye on chemical weapons destruction.

The initiative of holding the Third public Hearings was approved by the Government of the RF, Committee on the conventional problems of chemical and biological weapons under the President of the RF, Ministry of Defense of the RF, other ministries and departments, public movements and associations, scientists and specialists, population.

PLACE AND TIME OF THE HEARINGS

Russia, Kurgan Region
The city of Kurgan - July 8,10, 1997
Shchuch'ye - July 9, 1997

SPONSORS OF THE HEARINGS

The USA Government
The Switzerland Government
The Swiss Green Cross
The Administration of Kurgan Region

TIME-LIMIT OF THE HEARINGS

07.07.97 - arrival and accommodation of the participants of the Hearings; session of the Hearings organizational Committee.
08.07.97 - registration of the participants of the Hearings; beginning of the work of the Hearings in Kurgan (reports, statements, questions, answers).
09.07.97 - leaving for Shchuch'ye; continuation of the Hearings (reports, statements, questions, answers).
10.07.97 - continuation of the Hearings in the city of Kurgan (reports, statements, questions, answers, adoption of the concluding document); departure of the participants of the Hearings.

Within three days (July 8-10) 63 participants made reports and statements at the Hearings, including:

- representatives of the Presidential and Governmental structures of the RF - 2 persons;
- deputies of the State Duma of the RF - 2 persons;
- representatives of the National organization of Green Cross International in Russia - 2 persons;
- representatives of the public of Kurgan Region - 8 persons;
- representatives of the bodies of (ministries, departments, committees) public health, protection of environment and natural resources - 9 persons;
- scientists and specialists working out the technological and design-estimate documentation for construction of the CWDF and development of the infrastructure of the areas - 32 persons;
- foreign participants of the Hearings - 8 persons.

In addition to this, 20 poster sessions (that were not declared and, respectively, not included in the program of the Hearings), reports and statements were made.

THE THIRD PUBLIC HEARINGS ON CHEMICAL WEAPONS DESTRUCTION
held on July 7-10, 1997 in Kurgan - Shchuch'ye

PROGRAM

07.07.97, Monday
17.30 - arrival of the participants of the Hearings
20.00-21.00 - session of the Hearings organizational Committee

08.07.97. Tuesday
9.00-9.30 - registration of the participants of the Hearings
9.30-11.00 - the first morning session

Co-chairmen:
A. I. Bukhtoyarov, First deputy of the Head of Administration of Kurgan Region
S. I. Baranovsky, Vice-president of the Russian Green Cross

1. A. I. Bukhtoyarov, First deputy of the Head of Administration of Kurgan Region. Introductory word.

2. S. I. Baranovsky, Vice-president of the Russian Green Cross.
"The aims and tasks of the Third public Hearings on the problem of chemical weapons destruction."

3. V. A. Ulyanov, Head of the department for destruction of CW of the Department of the commander of the radiation, chemical and biological protection troops. "Problems of chemical demilitarization in the Russian Federation."

4. A. A Kosarev, Department of commander of the radiation, chemical and biological protection troops. "Sequence of creation of the chemical weapons destruction facility on the territory of Shchuch'ye Area of Kurgan Region."

5. N. I. Kalinina, State Duma, Defense Committee. "On establishing the fundamental legislation regulating the process of chemical weapons destruction."

6. Kevin Flamm, Manager of the Project "Program of the USA "Joint reduction of the threat." "Assistance of the USA to Russia for destruction of CW."

7. Questions and answers.

11.00-11.30 - break
11.30-13.00 - the second morning session

Co-chairmen:

V. V. Mironov, Deputy Head of Administration of Kurgan Region
S. I. Baranovsky, Vice-president of the Russian Green Cross

1. A. M. Kochetkov, Head of division of the Committee on conventional problems of chemical and biological weapons under the President of the Russian Federation. “Problems of chemical demilitarization in the Russian Federation.”

2. Yu. I. Mamontov, Head of division of rehabilitation of the territories of Administration of Kurgan Region. “Problems of destruction of CW stored in Shchuch’ye Area of Kurgan Region.”

3. V. V. Sheluchenko, V. A. Petrunin, V. V. Demidyuk, GosNIIOKhT. “Safe, reliable and environmentally clean up-to-date two-stage Russian technology of chemical weapons destruction.”

4. V. G. Ratushenko, Head of division of GosNIIOKhT. “Technology of disposal of munitions containing chemical agents.”

5. S. G. Grigoryev, Department of the commander of the radiation, chemical and biological protection troops.” “A complex of arrangements for securing safety of the residents of Shchuch’ye Area when chemical weapons are destroyed.”

6. B. Ye. Shenfeld et al, Director of UralNII “Ecology.” “Comprehensive environmental, medical and social evaluation of the state of Shchuch’ye Area with consideration for possible impact of the chemical weapons destruction facility.”

7. Questions and answers.

13.00-14.30 - break
14.30-16.00 - the first day session

Co-chairmen:
N. I. Kalinina, Consultant of the Government of the Russian Federation
Yu. I. Mamontov, Head of division for rehabilitation of the territories of Administration of Kurgan Region

1. E. G. Vasilyuk, Chairman of the State Committee on Environmental Control in Kurgan Region. “Approaches of the Kurgan State Committee on environmental control to the problem of destruction of CW.”

2. A. S. Stolov, V. G. Blok, AO “Giprosintez”, Volgograd. “The basic solutions for creation of the CWDF in Shchuch’ye Area.”

3. G. A. Kuzmina, AO “Giprosintez”, Volgograd. “Impact of the created CWDF on the state of the environment.”

4. P. Ye. Shkodich et al, Director of NII of Hygiene, Toxicology and Occupational Pathology, Volgograd. “Sanitary and toxicological evaluation of the products of detoxification of organophosphorus chemical agents.”

5. L. A. Fedorov, President of the Union “For chemical safety.” “Experience in cooperation between the Administration and public organizations in the areas of conducting the works with chemical weapons.”

6. Questions and answers.

16.00-16.30 - break
16.30-18.00 - the second day session

Co-chairmen:
Yu. I. Mamontov, Head of division for rehabilitation of the territories of Administration of Kurgan Region
V. A. Petrunin, Director of GosNIIOKhT.

1. V. M. Kolodkin, Director of the institute of investigation of natural and technogenic disasters of the Udmurt State University. “Preliminary analysis of the risk connected with storage and destruction of CW in Shchuch’ye Area of Kurgan Region.”

2. V. A. Zhdanov, Department of the commander of the radiation, chemical and biological protection troops. “Characteristic of the chemical agents stored at the storage facility in Planovy of Shchuch’ye Area of Kurgan Region.”

3. V. S. Petrosyan, Moscow State University, Faculty Head. “Review of the Russian technologies for chemical weapons destruction.”

4. V. V. Demidyuk, GosNIIOKhT, Leading research worker. “Review of foreign technologies for chemical weapons destruction”

5. S. D. Varfolomeyev, Moscow State University. “Possible ways of finishing the biodegradation technology of CW destruction.”

6. Kevin Flamm, Manager of the USA Program “Reduction of the common threat.” “USA Program for chemical weapons destruction”

7. V. V. Baryshnikov, Director of AO “Kurgankhimmash.” “On the capabilities of AO “Kurgankhimmash” for production and delivery of nonstandardized equipment for the CWD plant.”

8. Questions and answers.

18.30 - end of the first day
19.00-20.00- discussions, exchange of opinions as initiated by the participants in the Hearings.

09.07.97, Wednesday - out-of-town session in Shchuch'ye

8.00 - leaving for Shchuch'ye
11.30-12.00 - arrival at Shchuch'ye
12.00-13.30 - the 1st out-of-town session in Shchuch'ye

Co-chairmen:
V. A. Sidorov, Head of Administration of Shchuch'ye Area of Kurgan Region
S. I. Baranovsky, Vice-president of the Russian Green Cross
Yu. I. Mamontov, Head of the division for rehabilitation of the territories of Kurgan Region Administration.

1. V. A. Sidorov, Head of Administration of Shchuch'ye Area of Kurgan Region. "Proposals of Administration of Shchuch'ye Area for creation of the CWDF."

2. V. N. Perevertin, Commander of troop unit 92746. "Arrangements to secure safety at the State storage facility of munitions containing chemical agents in Shchuch'ye, Kurgan Region, when storing them and preparing for destruction."

3. L. A. Fedorov, President of the Union "For chemical safety." "Once more on the problem of safe destruction of CW."

4. T. Yu. Grozdova, Association of physicians "Health to children", Saratov. "Medical examination of the state of health of the population of Shchuch'ye Area."

5. V. V. Demidyuk, Leading research worker of GosNIIOKhT. "The system of monitoring and analytical control of the chemical weapons destruction facility in Shchuch'ye."

6. M. A. Krasikov, Chairman of the Shumikha area Committee on environmental control. "Views on the problem of chemical weapons destruction of the Shumikha area committee of environmental control."

7. V. B. Kolesnikov, State design institute 31 SS of MD of the RF, S. A. Plashchinnov, Committee on architecture and construction of Administration of Kurgan Region. "Development of social infrastructure in Shchuch'ye in connection with the creation of the chemical weapons destruction facility."

8. Questions and answers.

13.30-1400 - break
14.00-15.30 - 2nd session

1. V. A. Alexeyev, Head of Administration of the Kiznersky area of the Udmurt republic. “Necessity of preparatory arrangements to be made prior to liquidation of chemical weapons.”

2. V. S. Permyakov, Head of the Main Department of CD and ES of Kurgan Region. “On the arrangements for securing the safety of the residents of Shchuch’ye Area.”

3. D. Ostler, Representative of the Public council of representatives of population, the state of Utah, USA
G. Griffith, Authorized person of the county of Tooele, USA. “On the work of the public council of representatives of the population of the town of Tooele within the framework of the US program for chemical weapons destruction.”

4. N. P. Porvatova, Head of in-patient department of the Shchuch’ye Central Area Hospital. “On the guarantees of social support and payment of compensation for the risk to the population of the area.”

5. V. M. Kolodkin, Director of the institute of investigation of natural and technogenic disasters of the Udmurt State University. “Preliminary analysis of the risk connected with the storage and destruction of CW in Shchuch’ye Area, Kurgan Region.”

6. Yu. I. Yeshchenko, Deputy chief engineer of AO “GiproSintez” (Volgograd). “Organization of the technological process of chemical weapons destruction at the CWDF in Shchuch’ye, Kurgan Region.”

7. V. S. Polozov, Deputy of the area assembly. “Approach to the CWD problem of the deputy of the area assembly (of deputies).”

8. A. N. Zakharov, Chairman of the area Assembly of deputies of Shchuch’ye Area. “On participation of the deputies of the area in solving the problem of the safe destruction of CW.”

9. V. S. Petrosyan, Moscow State University, Faculty Head. “Review of the Russian technologies for destruction of CW” (repetition of the report made in Kurgan on July 8, 1997).

10. Yu. I. Mamontov, Head of division for rehabilitation of the territories of Administration of Kurgan Region. “Problems of destruction of CW stored in Shchuch’ye Area of Kurgan Region.”

11. N. I. Kalinina, State Duma, Defense Committee. “On creation of the fundamental legislation on regulating the process of destruction of CW.”

12. S. I. Baranovsky, Vice-president of the Russian Green Cross. “The aims and tasks of the Third public Hearings on the destruction of CW.”

13. V. A. Sidorov, Head of Administration of Shchuch’ye Area of Kurgan Region. “Proposals of the Administration of Shchuch’ye Area for creation of the CWDF.”

14. Questions and answers

16.30 - end of the work of the out-of-town session of the Hearings.
17.30 - leaving for Kurgan

10.07.97, Thursday

9.30-11.00 - the first morning session

Co-chairmen:
A. I. Kozyrev, Deputy Head of the department of public health of Administration of Kurgan Region
Yu. I. Musiychyuk, Head of division of the Committee on Public Health of Administration of St. Petersburg, Chief occupational pathologist of the Federal department of medical, biological and extreme problems under the Ministry of Public Health.

1. V. G. Petrov et al, Institute of applied mechanics of UrO of the RAS, Head of laboratory, the Udmurt branch of the “Union for chemical safety.” “Automated system for warning and evacuation of the population in case of emergency at the facilities for storage and destruction of CW and at other extremely hazardous facilities.”

2. L. V. Aslanyan, deputy head of the department of the Federal department of medical biological and extreme problems under the Ministry of Public Health. “Arrangement of the medical and sanitary services to be rendered to the personnel of the chemical weapons destruction facilities.”

3. N. D. Antipova, Ministry of Public health, Deputy head of the division of examination and program-objectives of the State inspection for sanitary and epidemiological supervision. “Organization of the study of the background state of health of the population residing on the territory of observation zones near the chemical weapons destruction facilities, assessment of the risk, morbidity rate monitoring.”

4. A. A. Kasparov, V. N. Fomenko, I. V. Shalganova, A. Yu. Shirokov, Federal department of medical, biological and extreme problems under the Ministry of Public Health. “Programs for training the medical personnel of the territorial public health bodies in the areas where chemical weapons are destroyed.”

5. A. S. Taranov, Assistant Professor of Kurgan State University. “Capabilities of assimilation potential of Shchuch’ye Area in connection with the problem of chemical weapons destruction.”

6. Yu. I. Musiychyuk, Chief occupational pathologist of the Federal department of medical, biological and extreme problems of the Ministry of Public Health. “Requirements to the materials about the state of health of the population around the chemical weapons destruction facilities.”

7. A. I. Freidin, Head of toxicological section of the team for specialized medical aid in Kurgan, Acting Chief toxicologist of the region. “On the state of health of the population of Shchuch’ye Area.”

8. Questions and answers.

11.00-11.30 - break
11.30-13.00 - second morning session

Co-chairmen:
S. I. Baranovsky, Vice-president of the Russian Green Cross,
A. S. Tsupko, Director of the department for information policy and public relations of the Administration of Kurgan Region.

1. M. M. Sedov, Head of the Shchuch’ye branch of the “Union for chemical safety”. “Approach of the “Union for chemical safety” to the problem of chemical weapons destruction in Shchuch’ye Area of Kurgan Region.”

2. G. N. Podtyosov, Deputy Chairman of the Government of the Chelyabinsk region. “Proposals of the Government of the Chelyabinsk region for the problem of destruction of CW in Kurgan Region.”

3. Peter Hille, Co-founder of the Kentucky Environmental Foundation, USA. “The role of the local population in the process of taking decisions on chemical demilitarization.”

4. O. N. Pitsunova, Director of the programs of the Center of assistance to environmental initiatives. “Civil control over the process of destruction of CW as a guarantee of safety.”

5. K. M. Matveychyuk, Member of the social and political Council under the Administration of Kurgan Region. “Some views on the CWD problem of the members of the social and political Council under the Administration of Kurgan Region.”

6. A. I. Zherebtsova, Deputy of Kurgan Regional Duma. “Social and economic problems of the population of Shchuch’ye Area and proposals for their solution.”

7. I. I. Manilo, President of Kurgan Regional branch of the Russian Green Cross (RGC). “The role of public movements and Kurgan Regional branch of the RGC in shaping the public opinion on the problem of destruction of CW.”

8. Questions and answers.

13.00-14.30 - break
14.30-16.00 - first day session

Co-chairmen:
Yu. I. Mamontov, Head of the division for rehabilitation of the territories of Administration of Kurgan Region,
S. I. Baranovsky, Vice-president of the Russian Green Cross

1. Stephan Robinson, Coordinator of the program of Green Cross International “Overcoming harmful consequences of the arms race”. “Participation of the public in construction of the Basel plant for incineration of toxic waste.”

2. Paul Walker, Manager of the project “Chem Trust” Global Green USA. “The problems of destruction of CW: US prospects.”

3. Glen Browder, Former USA senator, Institute for raising qualification of the US Navy. “Destruction of CW: Approach of the US senator.”

4. Michael Lesnick, Keystone Center, Colorado, USA. “Mutual assistance in the problems of environmental decontamination.”

5. Arnold Reitze, University named after George Washington, Washington, USA. “The role of the law for protection of the nature and expert councils in the process of environmental decontamination.”

6. Questions and answers.

16.00-16.30 - break
16.30-18.00 - second day session

Co-chairmen:
A. I. Bukhtoyarov, First deputy of the Head of Administration of Kurgan Region
S. I. Baranovsky, Vice-president of the Russian Green Cross

1. Discussion and adoption of the concluding document.

2. Press-conference.

18.30 - completion of the work of the Third public Hearings devoted to the CWD problem.

LIST OF ORGANIZATIONS WHOSE REPRESENTATIVES PARTICIPATED IN THE HEARINGS

1. National Organization of Green Cross International (Russian Green Cross)
2. Administration of Kurgan Region
3. Kurgan Regional Duma
4. Government of the Chelyabinsk region
5. Administration of Shchuch'ye Area of Kurgan Region
6. Kurgan Regional branch of the national organization of Green Cross International
7. State Duma of the Russian Federation, Defense Committee
8. State Committee on environmental control in Kurgan Region
9. Department of public health of Kurgan Region
10. Kurgan State University
11. NII of hygiene and occupational pathology, St. Petersburg
12. Ministry of Defense, Department of the commander of RCBP troops
13. Ministry of Defense, Main Missile and Artillery Department
14. Committee on conventional problems of chemical weapons under the Government of the Udmurt Republic
15. Federal department of medical, biological and extreme problems under the Ministry of Public Health and Medical Industry of the Russian Federation
16. Ministry of Public Health and Medical Industry of the Russian Federation
17. Kurgan State Agricultural academy named after T. S. Maltsev
18. GosNIIOKhT (Moscow)
19. AO "GiproSINTEZ" (Volgograd)
20. SDI 31 SS of the Ministry of Defense of the Russian Federation
21. Swiss Green Cross
22. Global Green USA
23. Public association "Union for chemical safety"
24. Public and political Council under the Governor of Kurgan Region
25. Economic Council under the Governor of Kurgan Region
26. Apparatus of the Government of the Russian Federation
27. Committee on conventional problems of chemical and biological weapons under the President of the Russian Federation
28. Administration of St. Petersburg
29. NII of hygiene, toxicology and occupational pathology
30. Institute for raising qualification of the Federal department of medical biological and extreme problems under the Ministry of Public health
31. Moscow State University
32. Saratov regional children's hospital, Association "Health to the children"
33. NII "Microbe" (Saratov)
34. Ministry of Industry of the Saratov region
35. Center of assistance to environmental initiatives (Saratov)
36. Administration of the Kambarka area of the Udmurt republic
37. Administration of the Kiznersky area of the Udmurt republic
38. Administration of the Penza region

39. Committee on environmental control of the Kirov region
40. Udmurt State university
41. Institute of applied mechanics of UrO of the RAS
42. Urals NII of ecology
43. Ministry of Emergency Situations of the RF
44. Institute for investigation of the natural and technogenic disasters (Izhevsk)

LIST OF PARTICIPANTS OF THE THIRD PUBLIC HEARINGS ON CHEMICAL WEAPONS DESTRUCTION

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1.	ALEXEYEV Vladimir Alexandrovich Administration of Kiznersky area, Udmurt republic, Head of administration	(34154) 2-19-05
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3.	ASLANYAN Levon Vagarshakovich Ministry of Public Health, Department of medical, biological and extreme problems of the ministry of public health. Deputy head of the department	(095) 190-71-86
4.	BARANOVSKY Sergei Igorevich Russian Green Cross, Vice-president	(095) 927-83-69 fax 923-68-33
5.	BEZBORODOV Nikolai Maximovich State Duma of the RF, Defense Committee, Deputy Chairman of the Committee	
6.	VARFOLOMEYEV Sergei Dmitriyevich Moscow State University	(095) 939-35-89
7.	VYAZMINA Olga Vladimirovna Russian Green Cross, Director for international links and information	(095) 927-82-87
8.	GORBUNOV Nikolai Nikolayevich Ministry of Defense, MMAD	(095) 296-08-32
9.	GRIGORIEV Sergei Grigorievich Ministry of Defense, Department of Commander of RCBP troops	
10.	GRITSUNOVA Natalia Nikolayevna Russian Green Cross, Chief accountant	(095) 927-85-81
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FINAL DOCUMENT

of the Third Hearings on the CW Destruction in Shchuch'ye Area, Kurgan Region, held on July 7-10, 1997

The destruction of CW in the Russian Federation is an urgent problem connected with both reduction of social tension in the area of storage of chemical weapons, with improving the environmental situation in the country and fulfillment of international obligations of Russia in the field of chemical demilitarization.

In accordance with the Decrees of the President of the Russian Federation, Federal program-objective "Destruction of CW stockpiles in the Russian Federation", Federal law "On the destruction of CW", the chemical weapons (Sarin, Soman, V-gas, phosgene) stored in Planovy in Shchuch'ye Area, Kurgan Region, are to be destroyed in the area of their storage.

The present social, economic and environmental situation as a whole in the region is rather complex. The population experiences anxiety about environmental problems, including those connected with the activities of PO "Mayak".

The Resolution of the Government of the Russian Federation adopted in December 1996 enabled preparatory works on creation of the facility for destroying chemical weapons stored on the territory of Kurgan Region to be started. The population is not informed enough on the problems of possible impact of the planned facility on the environment and health of the population, as well as on the formation of the fundamental legislation regulating the process of chemical weapons destruction.

Today's state of Kurgan Region is determined by the decline in industrial production, unemployment, crisis in the agrarian sector, unfavorable environmental situation, lack of investments for creation of new production facilities and development of natural resources. The anticipated possibility of technogenic accidents, terrorism and subversive acts, aggravation of social tension cause great anxiety among the population concerning the safe storage of chemical warfare gases.

In the course of free exchange of opinions, discussion and correlation of different approaches the participants of the Hearings consider that:

- destruction of CW stockpiles is an urgent problem affecting the interests of the country and population residing in the areas of storage and forthcoming destruction of these weapons. This problem should become the subject of permanent attention of the federal, regional and local power bodies, ministries and departments, non-governmental organizations, the public, so as to prepare coordinated decisions on the most urgent problems;

- under conditions of the complex economic situation in the country, insufficient budgetary financing of the preparatory arrangements for chemical weapons destruction, the wider attraction of the public, including non-governmental organization, can contribute to revealing and attracting additional alternate budget sources of financing;

- it is advisable for the organizers of the Hearings to inform the State Duma of the Federal Council and the Government of the Russian Federation about the necessity for speeding up the adoption of the legislative acts regulating the execution of the works on the storage and destruction of CW and provision of safety for the population;

- it seems advisable for the Administration of Kurgan Region and Shchuch'ye Area to work out the provision on the status of the areas of storage and destruction of CW and giving such a status to Shchuch'ye Area;

- it is necessary to provide full, objective and operative information of the population about technological solutions and measures for protection of the environment, protection of the health of the population and rights of the people engaged in storage and destruction of CW, which should be reflected in setting up and functioning of the information centers with attraction of the resources of the Federal budget for the work with the population. Recommendation should be given that the National organization of Green Cross International and other public organizations take an active part in setting up such centers;

- it is necessary to carry out the comprehensive examination of the state of the population health and environment in the areas of storage and forthcoming destruction of CW and additional medical examination of the population with the aim of determining the risk groups, with attraction of both the budgetary and alternate budget resources;

- it seems advisable for the administration of Kurgan Region with the forces of the leading specialists and with enlisting services of the public organizations to conduct special environmental training (re-training) of the personnel of the top-level officials, social experts, as well as comprehensive environmental education of the population;

- give the recommendation for the Administration of Kurgan Region and Shchuch'ye Area together with the State customer to develop the list of top-priority facilities of social and engineering infrastructure and make a request to the Government of the RF for financing the construction of these facilities;

- give the recommendation for the Administration of Kurgan Region, Ministry of Defense acting as the State customer, as well as to the ministries and departments concerned to develop and implement the plan of measures for easing of social tension in Shchuch'ye Area, which will facilitate the execution of the work on chemical weapons destruction;

- it is necessary to carry out the public environmental examination of all documentation for the chemical weapons destruction facility and its defense at the public Hearing in accordance with the legislation;

- approve the work done by the State customer, Administration of Kurgan Region and other ministries and departments on the development of "Substantiation of investments to the construction of the facility for destruction of the chemical weapons on the territory of Shchuch'ye Area of Kurgan Region". Give the recommendation for the State customer, Administration of Kurgan Region and other ministries and departments concerned to take into account all proposals of the region and area to the maximum extent;

- ask the State customer to speed up the solution of the problem for delivery of the mobile laboratory to the territory of Shchuch'ye Area;

- it is necessary to expand the international cooperation in the field of chemical demilitarization by attracting financial and technical assistance of specialized organizations and social funds;

- it seems advisable for the organizers of the Hearings to address the Coordinating Council of the leaders of the states of the Russian Federation engaged in

development of the single policy for the problem of destruction of CW with the request to incorporate the Heads of administrations of the areas, on whose territory the chemical weapons are stored and will be destroyed, into the said Coordinating Council;

- ask the State Duma of the Federal Council of the Russian Federation to speed up the ratification of the “Convention on the prohibition, development, production, stockpiling and use of chemical weapons and on their destruction” and to secure the guaranteed financing of the chemical weapons destruction;

- propose that the regional Duma should adopt the law of Kurgan Region prohibiting the import and carriage of the chemical warfare gases over its territory;

- it seems advisable to arrange the structure of the twin cities between Shchuch’ye of Kurgan Region and the town of Tooele, the state of Utah.

The participants of the Hearings appeal to all the states, intergovernmental organizations and those who didn’t take part in rendering assistance to Russia for destruction of CW, to support this process by technical and financial assistance.

The participants of the Hearings confirm the undoubted benefit of public Hearings as a means of exchange of opinions of the representatives of the power bodies, organizations responsible for solving the problem of destruction of CW, and public associations expressing the views of the population and for working out the joint ways of solving this urgent and complex problem having both intra-Russian and international importance. The participants of the Hearings thank the Government of the United States of America and other countries for rendering assistance in solving the problems of chemical weapons destruction.

It seems advisable to start holding such arrangements on regular basis in other regions where chemical weapons are stored and are planned to be destroyed.

OPENING MEETING

Professor Baranovsky, S.I., Vice President of the International Green Cross Organization in Russia, opens the Public Hearings

Dear residents of Kurgan Region, community representatives, guests, journalists, and colleagues who have gathered here to discuss this complicated social problem.

Let me introduce myself. My name is Sergey Igorevich Baranovsky. I am the Vice President of the Russian Green Cross and a co-chairman of the Third Public Hearings regarding CW Destruction (CWD).

You all have the hearings agenda and list of participants. Let's proceed with our first speaker, Mr. Alexander Bukhtoyarov, First Deputy Head of Kurgan Region Administration.

Bukhtoyarov, A.I., First Deputy Head of Kurgan Region Administration.

OPENING REMARKS.

Dear participants and guests:

On behalf of Kurgan Region Governor, Mr. Oleg Bogomolov, the Chairman of the Regional Duma, Mr. Lev Efremov, and the President's authorized representative of Kurgan Region, Mr. Anatoly Zhigachev, I would like to welcome you and wish you success in your work.

A diverse group of people are present today in this conference hall — an amalgam of occupations, organizations, and political views. Nevertheless, everyone here is pursuing one objective: to resolve this complicated and important problem affects both Kurgan Region and the larger population. This is a global problem requiring a global resolution. Therefore, the outcome of the Public Hearings will heavily influence the development and resolution of this complex and important CWD issue. I would like to apologize to Kurgan Region residents and would like to say a few words about the Region to our guests.

The USSR Supreme Council Presidium founded the Region by Decree on 6 February 1943 by expanding the adjacent Chelyabinsk Region. Kurgan Region has many geographical advantages being situated between Siberia and the Urals, one being that very important roads traverse the Region. To the west, it borders the important industrial areas of Chelyabinsk and Sverdlovsk Regions. To the north, it borders the Tyumen Region, an area important for gas and oil. To the south, the Russian state

border runs along two Kazakhastan provinces: the Kustanay and Northern Kazakhastan Regions. The area of Kurgan Region is more than 71,000 km^2. Nearly 50% of the Region's relatively small population of 1.1 million live in the two cities of Kurgan and Shadrinsk, both under Regional jurisdiction.

The Region's agriculture and industries — machinery construction, metal work, and construction — are quite developed. The total number of facilities and legal entities is more than 18,000. About 65% of enterprises are private.

Almost everyone residing in the CW stockpiling and proposed destruction areas, especially in Shchuch'ye and the adjacent areas, is preoccupied with the CWD problem. I have already mentioned that the future of these residents matters to the participants of these Hearings. We, the participants of the Hearings, are responsible for initiating the first step of chemical demilitarization in Kurgan Region. Because the Region residents have already been affected by the accident at the Mayak Facility in the Chelyabinsk Region, the current situation is exceptional. Therefore, they should be guaranteed absolute safety and compensation for legitimate damages that might occur during CWD operations, a guarantee that should come from the President, the Government, and local authorities. All of us are aware of the current status, that is, that the International CW Convention has been adopted. Though we have a similar Russian law, there is still a long road ahead. In particular, the legislation which would allow us to proceed with these activities is not fully developed. Human safety measures, technical issues, and the CWD technology are still unclear to us. This is why the Regional Administration was pleased to accept the International Green Cross proposal to conduct Public Hearings. We extend our thanks to the International Green Cross for its organizational and financial support during these Hearings.

Hopefully, the public's opinion, as well as the specialists' opinions to be presented at these Hearings, will help the Regional Administration, concerned ministries and agencies to develop the proper approach for resolving this complicated and important problem.

In conclusion, I would like to welcome again the participants and the guests of the Hearings and wish you success.

Thank you.

Baranovsky, S.I., Vice-President, Russian Green Cross

OBJECTIVES OF THE THIRD PUBLIC HEARINGS ON CHEMICAL WEAPONS DESTRUCTION PROBLEMS

Hello again! Dear colleagues:

Before describing the goals and objectives of the Hearings, I would like to thank all present participants here to discuss a problem very important not only to Shchuch'ye or Kurgan Region residents, but to the entire Russian Federation as well. I would like to thank the individuals and institutions who made these Public Hearings possible: the US Government, the Swiss Government, Kurgan Region Administration, and all representatives of the Green Cross Branches in Moscow, Shchuch'ye, Kurgan, Udmurt Republic, Saratov, and Penza.

Prior to outlining the Hearing objectives, I would like to provide you with the historical background.

All of those present here have dealt with the legacy of the cold war. I don't think we can be held accountable for the fact that Russia, like other countries during that period, did the utmost to protect its residents by creating storage facilities for various weapons. As a result, Russia built seven storage facilities, stockpiling 40,000 metric tons of lethal weapons. The USA has 8 storage facilities, stockpiling 32,000 metric tons of weapons. This is our "cross to bear." It is well known that these weapons are unusable due to their condition. However, we continue to store them as they continue to age. We will need to dispose of them. Something needs to be done. Certain measures have been taken in this direction. The USG and RFG (the USSR at that time) resorted to these measures.

We learned a lesson with the Chapayevsk facility. Perhaps you are aware of what happened in Chapayevsk. The failure of the Chapayevsk project resulted from the community's opposition and lack of professionalism in resolving this critical issue. As a result, Russia proved to be unsuccessful, and the CWD problem continues to plague Russia. Why is this?

The main reason for the failure of the RFG's approach was the lack of interaction with the public. What have we accomplished in the long run? Though the Government spent large sums of money the facility operation was halted. However, the legacy of the cold war was still ours to deal with, and the Government was not concerned with public opinion. Time does not stand still, however, and we realize that the munitions are aging, shells are subject to corrosion, and these weapons need to be destroyed. How will it be done? Where will it take place and what is the time frame? These questions remain unresolved. The Chapayevsk project made us aware of these issues.

The next lesson was probably learned in 1995. The Prime Minister issued a Resolution to proceed with the CWDF in Gorny, Saratov Region. I don't see any sense in repeating the information published in mass media. I just want to note that we put forward our best efforts, but the results were worse than those for which we had hoped. As usual, no information was provided to the Saratov Region population and no interaction took place between the authorities and the public. This resulted in the public being misinformed. It seems to me that the Shchuch'ye facility project is unfolding in a similar manner to the Chapayevsk scenario. At this stage, the Green Cross, with its scientific resources, became involved in the resolution of the problem. These resources include many scientists of different specialties, CWD related studies, medical expertise, risk assessment capabilities, and other resources. Based on its resources and acquired experience, the Green Cross, guided by its Charter reading, "Cooperation, not confrontation", for the first time came up with a proposal to discuss the problem, allow all concerned parties a chance to be heard, gather information, and, only then, move forward. The key concept to solving the problem was "cooperation". However, we had to remain alert and acquire information from reliable sources. This meant that the information for the public, various ministries and agencies, Administration, Government, and legislative bodies should come from professionals dealing with this problem and all its related aspects. It took us some time to perform certain work such as trying to convince the public that the Hearings were absolutely necessary. It took quite a while and cost us a pretty penny. Finally, after the RF President gave written support to the idea, the Hearings, the First Saratov Public Hearings on CW Destruction, took place in October 1995.

About 20-25 participants of the First Saratov Hearings are present here. They did not forget that tense atmosphere of the First Saratov Hearings, ranging from absolute rejection to understanding, lack of information, and alertness. Despite everything, the Hearings took place and we arrived at certain results.

The following is the first and the main result. The Saratov Region residents, including Krasnopartizansky Area, where Gorny is located, received more objective information on the problem, on projected methods to resolve it, on some decisions made by the Government, by public organizations and legislative bodies. We may assume that the educational objective of the hearings was achieved. Another problem we faced can be characterized by the word "compromise". It looks as if we failed to find a unanimous consensus at the first hearings. We failed yet. However, the progress is obvious. Why am I saying this? The final document adopted at the hearings, for example, outlined a new notion for our society, it was the term "public expert review". All the participants of the hearings accepted this term. Therefore, the following recommendation was made: to arrange the public expert review of the CWD projects. Two years have passed since that time, and now an undertaking aimed at conducting the public expert review of the Gorny facility was initiated. It marks the progress.

The second hearings were conducted in Izhevsk, Kambarka, in May 1996. Again we managed to move forward. The final document adopted at the hearings included

specific solutions, in particular, proposals to create a public-governmental committee to hold control over the chemical demilitarization process in the Republic. Is it important? Yes, it is.

A second point. One of the provisions of the final document adopted at the second hearings appealed to the Federal Duma requesting it to accelerate the law adoption process aimed at destroying chemical weapons, i.e. to initiate creation of the legislative basis for the entire chemical weapons demilitarization process. I would like to note that it was not the appeal of the Green Cross, it was the appeal of all the participants of the hearings, resulting from an open dialogue, debates and discussions. A certain consensus was achieved in the process of defining approaches to the CWD problem resolution. The Udmurt Republic population, first of all, representatives of Kizner, Kambarka, i.e. areas hosting storage sites, and Administrations of these two towns supported adoption of the chemical demilitarization law at all the stages. In the long run, following heated debates both in the Federal Duma and in the Federation Council, the law was adopted and signed by the President. We realize that this law, like any law, is not an ideal solution to the problem. This is just one of the four laws that will form the legislative basis for CW destruction. This is just the beginning. However, this is a step forward.

So, today we are opening the Third Public Hearings here on the Kurgan soil. The main objective of the hearings is information exchange, open information exchange, enlightenment and education. If someone considers the public environmental education to be the education only of Kurgan Region residents, this person is deluded. This is an interrelated process. Everyone will get information: lawmakers, administrations of all levels, scientists dealing with the chemical demilitarization problems, mass media, and US and RF Government representatives. The more information we acquire, the more accurate decisions we will make. The result will be an effort-consuming but consciously achieved compromise. We feel it is necessary to hold civilized discussions and a dialogue. All those who had a desire to come, have come. Nobody was turned down. All those who have something to say, were provided with this opportunity. The most important and critical ideas will be included in the final document, which will be published in mass media, and submitted to the Government of the RF, to the Federal Duma, to the Federation Council, and to the President's Administration. It will probably reflect the current status of the problem, our understanding of the core of the problem. I am calling you to "Cooperation not Confrontation". A compromise is plausible only in case of cooperation. We will be unable to move forward without a compromise. I strongly believe that we are united with one goal: safe destruction of CW in Russia.

I will tackle upon our organizational issues. The preparation of the Hearings took us about a year. The organizational committee via mass media, electronic and other types of media appealed to all Russian residents with the proposal to participate in the hearings. We appealed to everyone with the following request: inform the organizational committee about the names of individuals and the subject matter of their

presentations. We didn't plan to edit reports. Our intent was to have a number and list of participants in order to arrange and conduct the hearings in an effective and timely manner. We needed the names of individuals and topics of their presentations in order to give the opportunity to everyone to speak up during the three days of our work both in Kurgan and Shchuch'ye. There are a lot of different issues that should be grouped together. We asked all the participants to hand in their reports or at least summary of their reports in order to publish the materials of the hearings in a timely manner. You had this opportunity during the participants' check-in. The organizational committee is requesting everyone to hand in the texts of the presentations either to the organizational committee or to the press center, which is operating here. It is preferable to have the presentations on discs as it will add to effectiveness of our work and will allow us to publish the materials as soon as practical.

And another thing. We have to discuss and adopt the final document that will mark the logical completion of our hearings. We established editing committees during the previous hearings. Our intent is to establish such a committee at these hearings as well. Yesterday, the organizational committee held its session and developed this proposal. Alexander Ivanovich will inform you about the proposed nominees from the organizational committee. We have to establish the editorial committee today. I am also asking the attendees to focus on the message of your presentations, come up with specific comments and recommendations and present them either to the organizational committee, section chairmen or the press center in order to have them included in the final document.

Ulyanov, V.A., Radiological, Chemical and Biological Defense Forces, Ministry of Defense of the Russian Federation

CHEMICAL DEMILITARIZATION PROBLEMS IN THE RUSSIAN FEDERATION

Having signed the *Convention on the Prohibition of the Development, Production, Stockpiling and Use of CW and on Their Destruction* in January 1993, Russia confirmed its commitment to the chemical demilitarization program and its readiness to do everything necessary to fulfill the provisions stipulated by this document.

Based on the provisions of the Convention, it enters into force following its ratification by 65 countries, an event that occurred in April 1997, after Hungary, as the 65th country, submitted its instrument of ratification. By now, the Convention has been ratified by ninety-five countries.

The CW (CW) inventory in the Russian Federation totals about 40 thousand tons. Kurgan Region inventory is about 5.5 thousand tons, or approximately 14% of the total inventory.

The accumulated experience of chemical weapons destruction in Russia has shown that the entire complex of problems related to their large-scale destruction can be resolved only by using an insightful approach to the problem, by taking into account domestic and international experience and by acting in accordance with the adopted Federal Destruction Program.

This program was under development for several years. Based on the Resolutions issued by the Government of the Russian Federation, this task was assigned to the Ministry of Defense (MOD) of the Russian Federation. The MOD, interacting closely with other ministries and agencies, developed a corresponding document. Its contents were based on the experience of the MOD (RCBDCOM) destroying chemical agents at the Chapayevsk CW Destruction Facility. It includes theoretical and experimental information and data on CW handling as well as information related to long-term experience acquired by interaction with scientific and industrial enterprises testing chemical weapons destruction technologies.

In accordance with Decree No. 330, issued by the President of the RF on 17 February 1994, the MOD organizational and staffing structures contributed to the implementation of the Federal Program. The program was evaluated by various inspection agencies, including environmental entities, and was approved by the CW stockpiling regions. The Federal Program Objective titled “Destruction of CW Inventories in the Russian Federation” was approved by the Resolution issued by the RF Government in March of 1996. Consequently, the Program acquired “presidential status”.

In order to implement the Federal Program Objective, the MOD, appointed by the RF President’s Decree No. 314 as of 24 March 1995 to be the Federal Client, will have to resolve a number of complicated and acute problems. All of them, as a whole, aim at the resolution of the chemical demilitarization problem in the Russian Federation. The basic problems to be resolved are as follows:

1. Ensure safe storage of chemical weapons. This problem is currently being resolved through inspections of the munitions, and by activities geared towards preventing problems with them. Work is also being done to improve the security and response systems, to define the priority of munitions’ destruction, based on their storage period and conditions, and to improve the system for remedying the aftermath from serious accidents.

2. Examine the public health and environment around the chemical weapons stockpiling and destruction areas. This problem is being addressed by involving doctors and specialists from sanitary, epidemiological and environmental organizations, along with obligatory participation by similar organizations located in the regions being surveyed. Currently, the initial examination was performed in the Krasnopartizansky area, Saratov Region and Kambarka, Udmurt Republic.

We have planned such activities for Shchuch'ye Area, Kurgan Region, and will indeed conduct them.

3. Create safe environmental monitoring systems. The resolution of this problem will be considered in detail through the course of the Public Hearings and in the presentations developed by various specialists.

4. Improve chemical weapons destruction technologies.

   It should be noted that scientific and technical developments related to chemical weapons destruction in the Russian Federation began at the end of the 70's. Since this time, about twenty different technologies and technical proposals for chemical weapons destruction, made the leading industrial enterprises, the Academy of Sciences and regional organizations, were reviewed.

   The Government's Resolution, dated 9 October 1995, established an expert review committee including lead scientists from the Russian Academy of Sciences, universities, industrial enterprises, representatives from inspection agencies and the chemical weapons stockpiling regions. This committee was established to review and select technologies to be used at the chemical weapons destruction facilities under construction.

   The technology developers will present more detailed information on this issue.

5. Train the chemical weapons destruction facility operating personnel. I would like to point out that specially trained personnel would operate these facilities. The Saratov Military Engineering College of Chemical Defense has developed a six-year program to train engineers for this purpose. Technical personnel from industrial facilities, including the industrial branches in the CW stockpiling areas, will be involved.

   The destruction of the chemical weapons is planned to take 5-6 years, following which, the activities aimed at facility decommissioning, process equipment decontamination, cleansing, and waste burial site operation and completion of the infrastructure facilities construction will be carried out.

6. Create the legislative base for the implementation of the Federal Program Objective "Destruction of CW Inventories in the Russian Federation".

   A report specially dedicated to this problem will be made.

7. Provide financing.

Pursuant to tentative evaluation, the financing of the CW Destruction Program will total approximately 16.6 trillion rubles based on 1996 prices. The expenditures for the Program implementation are to be specified in the course of the feasibility studies to be performed for specific facilities.

The Program financing is divided in the following way:

- safe chemical weapons destruction process – 300.4 billion rubles (1.8%);

- scientific, research and development activities aimed at destroying CW – 480.9 billion rubles (2.8%);

- construction of chemical weapons destruction facilities and solid waste burial sites – 2876.6 billion rubles (17.3%);

- operation of destruction facilities and waste burial sites – 3081.4 billion rubles (18%);

- availability of chemical weapons destruction and storage facilities for international inspection procedures – 50.8 billion rubles (0.3%);

- implementation of Federal laws on chemical weapons destruction – 3300 billion rubles (19.9%);

- other expenditures, including land allocation for chemical weapons destruction facilities and waste burial site construction, medical support, organizational-type activities, infrastructure development in the regions, decontamination of the areas where the chemical weapons destruction activities were performed, supplying the operating personnel and the local population living in the CW destruction area with protective means, maintenance of the military units and entities involved in the implementation of the chemical weapons destruction undertaking – 65551.9 billion rubles (39.3%).

All expenditures were estimated by assuming a 15-year period for the Program implementation. Recognizing both the money-consuming character of the Program and the necessity to reduce budget expenditures for the Program implementation, the provisions of the RF President's Decree No. 314, dated 24 March 1995, welcomed the involvement of non-budgeted financial sources, including gratuitous financial and technical assistance rendered by foreign countries, and welcomed the reuse of valuable materials resulting from the chemical weapons reclamation process.

Due to a complicated economic situation in Russia and because of insufficient funding provided from the budget for implementation of the Federal Program Objective, this issue comes to the fore. We recognize the immense role played by gratuitous financial and technical assistance rendered by foreign countries and established cooperation.

The most successful bilateral relations relating to the process of chemical weapons destruction were established with the US and Germany.

Pursuant to the technical tasks assigned by Russia, German companies develop and ship process equipment for construction of the chemical weapons destruction facility to the Gorny settlement, Saratov Region.

A cooperation agreement was reached with the US side aimed at constructing the facility for the destruction of chemical artillery - organophosphorus agent-filled munitions - in Shchuch'ye Area, Kurgan Region. Resolution No. 1949 issued by the RF Government on 28 December 1996 initiated preparatory activities for the facility construction. We hope for long-term cooperation pursuing the final goal to construct the destruction facility on a turn-key basis with the use of the Russian two-stage technology.

In conclusion, I want to emphasize the fact that the implementation of the Federal Program Objective titled "Destruction of Chemical Inventories in the Russian Federation" will allow us to completely eliminate chemical weapons, which are just one of the types of weapons of mass destruction, improve the environment and dissipate social and psychological tension in the CW stockpiling regions.

Kosarev, A.A., Radiological, Chemical and Biological Defense Forces

STEPS IN THE CONSTRUCTION OF THE CHEMICAL WEAPONS DESTRUCTION FACILITY IN SHCHUCH'YE AREA, KURGAN REGION

In my presentation, I would like to describe the work already performed by the Federal Client to construct the CWDF and the work we still have ahead.

The work of the Federal Client is based on the RF President's Decree No. 314, dated 24 March 1995, "On RF Preparation to Fulfill International Chemical demilitarization Commitments," which stipulates the following basic provisions of RF preparation for the chemical weapons destruction process:

1. Russian CW inventories are subject to destruction in their stockpiling areas at facilities specially built for this purpose. The facility location shall be approved by the corresponding regions of the RF. Top priority shall be given to developing the social infrastructure of the regions where this type of facility will be located.

2. Top priority shall be given to population and environmental safety at all operational stages of chemical weapons destruction.

3. Reduction of budgetary expenditures for chemical demilitarization purposes shall be implemented by involving alternate budget financial sources, including financial and technical assistance provided by foreign countries and commercial and public organizations.

The RF Presidential Decree and several other documents served as a basis for developing the Federal Special Purpose Program on CWD in the Russian Federation.

Resolution No. 305, issued by the Government of the RF on 21 March 1996, approved the Federal Special Purpose Program, "Destruction of CW Inventory in the Russian Federation," and selected the MOD to be the Federal Client to implement said Federal Special Purpose Program and, accordingly, the CWDF in Shchuch'ye Area, Kurgan Region.

RF President's Decree No. 542, dated 13 April 1996, gave presidential status to the Federal Special Purpose Program.

The RF Constitution, laws, decrees and presidential orders, government resolutions and decrees and other regulating documents of state power authorities shall constitute the legislative base of the Program activities to be implemented by the Federal Client.

In accordance with the Federal Special Purpose Program and Russian law, MOD has performed organizational activities upon creation of the CWDF.

For example, the MOD submitted the "Petition of Intent" to Kurgan Region Administration (dated 2 April 1996), summarizing the proposal of CWDF creation in Shchuch'ye Area, Kurgan Region.

On 29 May 1996 deputies' hearings were held in Kurgan Region Administration building. The issue "On Preparation of the CW Destruction Process in Kurgan Region" was discussed. The hearings were arranged by a coalition of regional Duma (legislative body) and the Regional Administration, with the participation of MOD representatives, representatives of design institutes, the CW storage facility commander, representatives of various parties and public groups. As a result of the hearings, a recommendation was given to the Regional Administration to give consent to the MOD to develop the "Justification of Investment For Construction of a CW Destruction Facility."

On 4-5 June 1996 a session of the Regional Duma was held in Kurgan to discuss the issue of pre-planning the chemical weapons destruction process in Kurgan Region.

On 5 June 1996, as a result of the "Petition of Intent" review, the deputies' hearings and sessions of the Regional Duma, Kurgan Region Administration and Duma jointly adopted the Resolution No. 86/311, "On Preparatory Measures for the CW Destruction Process in Kurgan Region."

On 15 June 1996, the Head of Kurgan Region Administration, Chairman of the Regional Duma and the RCBDCOM MOD Chief adopted the "Protocol of Intent" on preparatory works to destroy CW stockpiled in Shchuch'ye, Kurgan Region.

On 20 July 1996, the First Deputy Head of Kurgan Region Administration and RCBDCOM MOD Chief approved the Resolution "On Development of the Justification of Investment for Construction of a CW Destruction Facility in Shchuch'ye Area, Kurgan Region," a document which defined two facility location options: Site 3, located 14 km north of the storage facility and 12 km north of Chumlyak; and Site 5, located 7 km west of the storage facility and 4 km southwest of Chumlyak.

On 4 September 1996, on review of Shchuch'ye Area social infrastructure components development list, the Head of Kurgan Region Administration and the RCBDCOM MOD Chief approved the Resolution on the Comprehensive Environmental Evaluation of Shchuch'ye Area, Kurgan Region.

Pursuant to this Resolution, during the period from October 1996 to May 1997, the Perm Institute of Industrial Ecology involved doctors and specialists in the areas of sanitary and hygienic problems to perform a comprehensive evaluation of the environmental, sanitary and medical conditions of Shchuch'ye Area, Kurgan Region.

In December 1996 the Head of Kurgan Region Administration approved a "Plan Of Activities Aimed At Developing The Justification Of Investment For Construction Of A CW Destruction Facility And Infrastructure Development Of Shchuch'ye Area, Kurgan Region". This Plan described the basic activities on the Justification of Investment Development.

In July 1996, in order to reduce budget expenditures on CWDF construction, a cooperative agreement was signed between the MOD and DoD to obtain US financial and technical assistance to create the CWDF.

The MOD, in cooperation with the Presidential Committee on Conventional Problems of Chemical and Biological Weapons and Kurgan Region Administration, developed a draft Resolution of the RF Government and obtained approval from the Ministry of Economy and Finance. This draft Resolution was signed by Mr. V. Chernomyrdyn, Prime Minister of the RF Government, on 28 December 1996. The Government's

Resolution No. 1949-r directed the MOD and Kurgan Region Administration to ensure the Justification of Investment development in 1996-1997 using US financial and technical assistance. The MOD shall compose a list of Russian organizations performing preparatory activities related to the CWDF construction in Shchuch'ye Area, Kurgan Region, using US funding and procedures for activities to be performed by these organizations.

RCBDCOM MOD, in order to implement the joint project on development of the "Justification of Investment for Construction of the CWDF" and the CWDF Construction Project, has defined the lead Russian organization (GIPROSINTEZ), issued the Statement of Work for the Justification of Investment Development and gave this organization the right to sign a contract with the US Company Bechtel National, Inc. This contract was signed on 15 November 1996 (for the total sum of US $1,128,907).

The RF legislation and the Plan for the Justification of Investment Development provided for the Public Hearings to discuss the CWD Problem in Shchuch'ye Area, Kurgan Region, to be conducted this July in Kurgan Region. These Hearings are currently underway in both Kurgan and Shchuch'ye, Kurgan Region.

In order to prepare for the Public Hearings and fully inform the public on the US CW Destruction Program, the DoD arranged a trip to the USA from 31 March to 5 April for MOD representatives, the Presidential Committee on Conventional Problems of Chemical and Biological Weapons, Kurgan Region Administration and Regional Duma, as well as design institutes (a total of 12 people). The groups visited the Aberdeen Proving Ground in Edgewood, MD and the Tooele CW Destruction Facility in Utah. In the course of the trip, the RF representatives visited the US CW Destruction Facility and received information about the safety and public outreach programs being performed at this facility.

The Federal Client, in the course of preparing for the Public Hearings, arranged and conducted a great effort which resulted in the following:

Kurgan Region Administration representatives have been participating in the monthly review meetings, held between Bechtel and GIPROSINTEZ at the CWDSO offices since this March, on the progress of the development of the Justification of Investment.

On 22 May, Kurgan Region representatives visited GosNIIOKhT in Moscow where they were informed about organophosphorus agent destruction technology; they also visited the institute buildings and learned about the institute's activities.

On 28 May, Kurgan Region representatives (8 people) took a trip to Chapayevsk, Samara Region, to visit the training facility, a former CWDF constructed 10 years ago.

From 3 to 6 June, the MOD, design and scientific institutes' representatives participated in the preliminary trip to the Kurgan and Chelyabinsk regions arranged by the international organization, Green Cross Russia. Throughout the trip, various meetings were held and attended by authorities and residents of these regions. They were familiarized with the main CWD issues. During these meetings, the main concerns of the authorities and the public were identified.

From 16 to 20 June in Moscow, Kurgan Region deputies visited the GPISS 31 MOD, GosNIIOKhT, RF State Duma, the Presidential Committee on Conventional Problems of Chemical and Biological Weapons, MOD and the CWDSO.

On 27 June, MOD, design and scientific institutes' representatives participated in the deputies' session, held in Shchuch'ye, Kurgan Region, to discuss the CWDF construction issue with the participation of the Regional Administration, Regional Duma, Chelyabinsk Region Government, and representatives from the US companies Parsons and Bechtel. As a result of the discussions, a Resolution "On Projected Construction of the Facility in Shchuch'ye Area to Destroy CW Stockpiled at the Planovy Storage Facility" was adopted.

On 17 October 1996, the Tax Postponement Agreement for the Russian Organizations performing activities within the framework of USG-assisted programs, dated 17 April 1996, expired.

The MOD undertook great efforts to have this agreement extended. On 19 May 1997, in his letter No. ve-6-606/378, Mr. V. Evstigneev, Tax Service Federal Advisor of the 1st rank, addressed the Federal Tax Service under jurisdiction of the RF regions. He informed the Service about the extension of the Agreement to implement the RF Government's Resolution No. ACH-p8 11251, dated 13 April 1997, and the RF Ministry of Finance letter No. 04-06-02/1, dated 28 April 1997.

Currently, the Justification of Investment documentation for construction of the CWDF developed by design institutes is under review in Kurgan Region Administration and will be submitted to the Federal Environmental Expert Review Board and the Ministry of Construction State Expert Review Board.

In order to select the most suitable CWDF location and promptly involve Kurgan Region organizations in the construction activities, using US financial and technical assistance, an agreement was reached with the Shchuch'ye and Kurgan Administrations to proceed with the engineering survey this summer. The US company Ralph M. Parsons Delaware, Inc. is ready to finance this effort. The issues related to the survey are currently under review. Kurgan Region Administration has already

selected Kurgan Region organizations to perform these types of activities, that is, the KurganTISIZ, Uralgiprozem, Zauralvodproject organizations.

Based on the results of the Justification of Investment Expert Review, it is planned to get Land Allocation Document approval for constructing the CWDF, as well as for the Resolution "On Tentative Approval of the Land Selection for the CW Destruction Facility Construction" in November by Kurgan Region Administration.

The Federal Client shall approve the Justification of Investment documentation prior to 1 December of this year.

Beginning December 1, the Russian General design organization GIPROSINTEZ, together with its lower-tier subcontractors shall proceed with the design activities (Design Stage) to be completed by March 1999. Kurgan Region Administration expects to get land sequestration approval for facility construction purposes, as well as the permit for the CWDF construction.

In February 1998, the working documentation development process will begin. It is expected to be completed in June 2000.

It is intended to start facility construction in May 1998 with the construction of the top-priority social infrastructure components; this process is expected to be completed by June 2002. Construction will proceed beginning 1999 with the basic social infrastructure components.

Equipment purchase and installation as part of CWDF construction might last from February 1999 to February 2002.

The 1st Phase of the Industrial Area and waste burial site construction might start in September 1999 and is expected to end in June 2001.

The 2nd Phase of the Industrial Area construction might start in July 2001 and is expected to end in December 2002.

Systemization activities of the CWDF Industrial Area are expected to last from July 2001 to June 2002.

Start-up of the CWDF 1st Phase might start in July 2002.

The time-frame of the CWDF creation is to be finalized in course of the stages' implementation, however, the chronology of facility construction will remain the same as presented here.

Kalinina, N.I., Federal Duma, Defense Committee

ON THE LEGISLATIVE BASE CREATION FOR THE CHEMICAL WEAPONS DESTRUCTION PROCESS

Dear colleagues:

My task is both simple and complicated due to the fact that we already can and must discuss the issue related to the legislating system of the CW Destruction (CWD) process. This history has been going on for some period of time. Many attendees might know that the last CW production facility stopped operating in 1987.

A decade has passed. This ten-year period, known as the "preparatory period," was rather unsuccessful in achieving any significant results, and we feel it is too early to speak about the end of this preparatory period. This ten-year period of preparatory work coincided with our country's complicated historical events and with political and economic crises which we have yet to recover from. It is rather difficult to predict their end. Therefore, our search for a political, historically unique decision on the elimination of certain weapons of mass destruction, a process without precedents in the armament history of all countries, requires careful consideration of and specific approaches to its resolution.

None of the countries had experience in CWD. As for technology development and the legislative process, our country was no exception. Therefore, the last ten years of preparatory work have obtained fewer positive results than we would have liked.

Most of us know that the preparatory stage of development is closely related to the development of the complicated CWD program. This complex program was to be approved by the USSR Supreme Soviet Resolution. Though one of the program revisions was reviewed, the work was not completed due to the collapse of the USSR. Later, the program was updated considering the current historical situation and the new outlook on the concept of the destruction process. This version was submitted to the RSFSR Supreme Council for review. The RSFSR Supreme Soviet was disbanded before it could complete the approval process

Consequently, a CWD Concept was developed and got considered (one of its revisions) at a parliamentary session of the First Federal Duma. However, this concept was also not approved due to a number of comments and claims made in the course of the parliamentary session. At that time, both the legislative and executive branches realized the acute necessity of developing not only federal programs, resolutions or decrees, but also the entire legislative base for this process. The problems seemed to be snowballing. Attempts by the government and the executive branch to resolve these problems by issuing resolutions and decrees and even by developing a federal program were not sufficient. In the early Nineties, hard work on the program started. However, this law, now titled "On CW Destruction," which was mentioned a number of

times already today, was finally adopted on 25 April 1997 despite the fact that it was submitted to Duma for consideration in 1995 and spent almost two years under review in the Federal Council. Most of us here are aware of all the hardships faced during the law's review, and if there is time and interest to discuss this issue, I am ready to participate.

What is the result of the ten-year period of preparatory work? We have the Special Purpose Federal Program already described today. We have the Federal Law on the Destruction of CW. We have a stack of regulatory documents and President's Decrees. We have established a system regulating the CWD process, guided by the MOD as the Federal Client. We have established an interdepartmental committee on chemical demilitarization, headed by Y.M. Baturin. In 1992, we saw the founding of the RF President's Committee on Conventional Problems of Chemical and Biological Weapons. The Government has issued a number of resolutions on the top-priority measures to locate the CWD facilities in the Saratov Region and the Udmurt Republic. A government committee for the selection of CWDF sites was established. A number of regulatory documents are issued almost annually to devise a list of the most important preparatory CWD measures. Naturally, it leads to the following question: is it sufficient to proceed with the CWD process? From a theoretical standpoint, the answer is "yes" since we have the Federal Program and the law acting as the basis for the process. However, for federal and legislative regulation, these two basic documents are not enough to implement the CWD process. Therefore, taking these two documents as the basis, we are faced with the necessity of establishing the entire legislative regulating system. In a nutshell, this system can be divided into several blocks.

Block I. This block deals with the development of all the special documents supporting and explaining the provisions of the basic CWD law. Most of us here know that two of the laws, one concerning social guarantees and another concerning compensations, are at the final stage of their review These laws have already passed many stages of approval. The law on social guarantees will be submitted to the Federal Duma for consideration this year. By the way, this law was approved a number of times by heads of administration and of the regions and areas with CW stockpiling. However, The Ministry of Finance has not yet cleared the law because of the expense involved, delaying its submittal to the Federal Duma. Currently, the estimated annual cost totals about 300 billion rubles. Naturally, the affected regions are very concerned about the situation. A similar draft resolution on social benefits was developed by the Chuvash Republic as a legislative initiative and was submitted to the Federal Duma. Currently, the law submitted by the Chuvash Republic is under review for approval from the Government. We feel that the two laws developed by the federal and regional bodies of the RF will be reviewed concurrently. The second law devoted to compensation for damages is now at the approval stage on the regional level. Now we are dealing with the problem of developing special laws, such as "On Conversion of CW Production Facilities" and "On the Convention Implementation". We feel that the Convention ratification process will be a tough one and will involve a number of reservations that would then have to be significantly amended to account for legislative regulation of

problems that will arise in the course of the Convention ratification process and in the implementation of the CWD Program. We have already begun receiving proposals, and we expect quite a few proposals from the RF regions to arrive, as the local authorities have a clearer picture of the problems subject to legislative regulation. The Head of Kurgan Region Administration, Mr. O.A. Bogomolov, has recently submitted a letter to the Government, defining a list of legislative documents that should be developed and adopted as soon as practical.

Block II. This block deals with the necessity of making changes and amendments to the current legislature, specifically to codes such as the criminal code, civil code, administrative and tax codes. The existing codes don't include articles reflecting specifics of the CWD process.

Block III. This block is devoted to regulatory documents, including decrees, resolutions and orders of the Government on critical issues, as well as documents adopted by the RF regions explaining the provisions of the basic law.

Block IV. This block focuses on federal programs. We have already described the basic program, the new Special Purpose Federal Program on Disease Control Support of Nuclear and CW Destruction Activities which was issued this spring. It contains more detailed information on CW, explaining more thoroughly the law's provisions. We expect development of the Federal Programs on the conversion of the former CW production facilities and on the specific aspects of these activities.

Thus, we can draw the conclusion that despite a ten-year period of preparatory work, the system of legislative regulating of the CWD process is at only the initial stage of development and the Federal executive bodies, as well as the Federal Council bodies, must seriously consider the local proposals, provided these proposals are based on the RF Constitution provisions.

Kevin Flamm, Project Manager, Cooperative Threat Reduction Program

US SUPPORT OF THE RUSSIAN CW DESTRUCTION PROGRAM

Good morning!

My name is Kevin Flamm. I am a chemical engineer working in the organization that deals with chemical weapons destruction. This organization is also responsible for the destruction of the US chemical inventory. I am the Project Manager of the US Program to assist Russia in destroying its chemical weapons inventory.

It is a great pleasure for me to speak to you. I would like to thank Mr. Baranovsky for giving me the opportunity to present my findings.

In the fall of 1991, the US Congress began implementing the Nunn-Lugar Program. This program serves as a basis for the DoD activities aimed at supporting the Russian CW Destruction Program. I was asked the following question many times: “Why is the US assisting the Russian Federation in CW Destruction?” I can honestly give you a straight answer. We consider this assistance to be an alternative means to the common defensive policy.

We believe that instead of spending money on the creation of new types of weapons, we should use the opportunity to assist other countries in destroying their weapon inventories and creating a peaceful and safe environment. This program shows that there are various CW Destruction programs in different regions of the RF.

The basic CWD activities are being conducted in three locations: Moscow, Saratov, and Shchuch'ye area. Another program within the framework of the Cooperative Threat Reduction Program is being implemented in the Southern Urals at the Mayak facility. We also construct storage facilities for fissile materials to be removed from nuclear ballistic missiles.

The reason why the US supports the CWD Program in the RF is because we believe that we should take advantage of this opportunity to create a safe, secure, and modern method to destroy the CW inventory. We provide two types of support: financial and miscellaneous services.

The primary focus of our assistance aims at improving CW monitoring and analytical control systems. We are also involved in CWD at the facility selected by the Ministry of Defense of the Russian Federation (MOD RF) to ensure the safe destruction of organophosphorus compounds. The slide shows different activities we conduct on CWD. In September 1996, three mobile labs were shipped from the US. Two labs were delivered to the MOD RF, and one lab was delivered to the National Research Institute of Organic Chemistry and Technology (GosNIIOKhT). These laboratories are similar to the laboratories being used in the USA which monitor the CWD process. The RF personnel have been excellently trained to operate the equipment installed at the mobile labs and to conduct the routine maintenance activities.

The creation of the Central Analytical Laboratory, which will be supported by the US, is a milestone of the entire testing effort. The plan is to build the laboratory at GosNIIOKhT, in the western part of Moscow. This laboratory will be the focal point for other small laboratories located at CWD sites. This laboratory is designated to pursue four objectives. The first objective is to develop analytical methods to be used for the destruction of the RF chemical inventory. The second objective is to train the laboratory personnel. The third objective is to assure quality control and high quality of all tests to be conducted in local labs. The fourth objective is to conduct environmental

studies prior to implementing the CWD Program. The laboratory design is completed, and construction may begin this fall. The laboratory is to be turned over to the RF at the end of 1998.

In July 1996, an agreement was signed between the US and MOD RF. The MOD RF was designated to be the Governmental Client of the CWD program. As the MOD RF is the Governmental Client, the purpose of the above-mentioned agreement was to confirm this fact. The US Congress appropriates money for this purpose. A certain portion of financing is provided annually. Currently, our 1998 financing proposal is under review by Congress. Our efforts mostly aim at developing projects as well as technology, as planned for 1997-1998, and I will discuss this later in detail. We feel it is necessary to evaluate laboratory results of the Russian Two-Stage CWD Process in order to substantiate the financing. We have brought with us documents that warrant financing; these documents may be found in the public outreach offices in Kurgan and Shchuch'ye.

The intent is to provide the public with documentation and explain how the activities will be conducted. This is the only way Congress will appropriate funding. The activities in 1997-1998 will include the following: engineering survey in the Shchuch'ye Area, documentation development on Stage 2 (Justification of Investment) and Stage 3 - design. In addition, the US will provide support in documentation development and shipment of equipment required for the munitions agent drainage. It will also evaluate the progression of the two-stage process in order to assess the results of intermediary testing. This undertaking aims at eliminating "Cold War" legacy. The DoD takes all measures to provide support in improving our existence and ensuring a safe future. The longer CW exist in their current form, the less safe the world is.

Kochetkov, A.M., Department Head of the Presidential Committee
On Conventional Problems of Chemical and Biological Weapons

CHEMICAL DEMILITARIZATION PROBLEMS IN THE RUSSIAN FEDERATION

Participants of the Third Public Hearings on the CW Destruction Problem:

The RF Presidential Committee (PC) on Conventional Problems of Chemical and Biological Weapons is very pleased that these Hearings are being conducted on a regular basis, because they help to improve mutual understanding between the central and local authorities on the CW Destruction Problem, to dissipate tension in the CW storage and destruction areas, and to clarify the nation’s policy on the above-mentioned issues.

A significant event has taken place since the 1996 hearings held in the Udmurt Republic: on 29 April 1997, the Convention on CW Prohibition entered into force for the countries that had submitted their ratification documents.

For the first time, an international agreement that prohibited CW development, testing and production, that regulated the CWD process and facilities, and that provided control of the Convention implementation entered into force.

By the time it entered into force, 88 countries, including the USA, had ratified the Convention.

Despite all the efforts undertaken by the RF Government and the President, the ratification process in Russia was not completed and Russia did not become a member-country of the Convention.

At the same time, in its appeal to the conference held by the Convention member-countries, the RF Federal Duma confirmed its commitment to chemical demilitarization and informed them of its intent to complete the Convention ratification process by this fall, provided appropriate conditions are met.

The toughest problems of chemical demilitarization are as follows:

- facility construction and destruction of CW;
- decommission and conversion of the former CW production facilities, as well as remedying their operations' effects;
- creation of a national system to ensure compliance with the Convention provisions;
- international control.

That the CWD problem encompasses myriad aspects is expected and costly. Its resolution will not only ensure Russia's conformity with international commitments, but also resolve Russia's internal problem of eliminating the potential environmental hazard in CW stockpiling areas. Resolution of this problem will require 90% of RF expenditures for the purpose of chemical demilitarization.

On 6 May 1997, the law titled "On CW Destruction" entered into force. This law legally endorsed, for the first time, the Russian policy aimed at destroying chemical weapons and created the legislative base of the Federal Program Objective titled "Destruction of the CW Inventory in the Russian Federation."

Thus, the foundation on which practical activities of CW destruction could proceed was established. This law provides for the activities aimed at protecting the residents living in the zones of protective activities (Articles 16,17 and 18). Without getting into specifics, I would like to point out that the approximate annual expenditure for implementing these articles totals 140 billion rubles. The task we now face is to prepare, first of all, for the provisions related to the zone of protective activities and for the implementation of the law, "On CW Destruction."

In addition to the law mentioned above, the draft laws, “On Social Protection of the Residents Working with CW” and “On Compensation to the Residents for the Damage Caused by the Impact of Toxic Chemicals on Public Health as a Result of Accidents in the Course of Storage, Transportation and Destruction Activities of CW,” are at the final development stage.

To decrease budget expenditures, the PC, in cooperation with the MOD RF, MFA RF and other ministries and agencies, have been working to attain foreign assistance, primarily from the United States and Germany.

In 1993, 1994 and the first half of 1995, within the framework of the Agreement dated 30 July 1992, assistance to Russia was rendered by providing specially developed methodological and informational documents which summarized the USA’s extensive experience in the CWD process, and by taking into account Russia’s specifics and requirements.

The US, in particular, developed and presented the following documentation:

- CWD alternative technology selection methodology;
- CWDF design criteria;
- Recommendations on the development of the comprehensive emergency preparedness plan in the CW stockpiling and destruction regions;
- Report on CWD alternative technologies with technical proposals.

In addition, during this period of time, Russian specialists scrutinized US approaches to the CWD problem, its CWD Program, and visited current and future CWD facilities. Six Russian specialists interned and were trained at US military and chemical facilities.

The methodology of the activities conducted during this time was based primarily on the unpreparedness of the Russians to perform specific procedures related to CWDF construction.

There was no CW Destruction Program. The facility sites were not selected.

Since the second half of 1995, all the goals of Russian-US cooperation have been reached. For example, the Russian-US Joint Experiment on the Evaluation of the Russian Two-Stage Process of Organophosphorus Agents Destruction was completed successfully. The First Stage was conducted in the USA in June-August 1995; the Second Stage was conducted in Russia during September-November 1995.

Currently, the CWDF in Shchuch’ye is being constructed with US assistance.

Germany provides assistance for the facility construction in Gorny, Saratov Region.

Another key element of the Convention deals with the elimination of CW Production Facilities and associated equipment. In accordance with Convention requirements, these facilities will be physically destroyed. The destruction process will start no later than one year after the Convention enters into force and shall be completed in no more than 10 years. In exceptional cases, if the Convention member-countries are in agreement, it is possible to convert such facilities for purposes not prohibited by the Convention. The facilities subject to conversion prior to the effective date of the Convention can continue their operation, however, non-converted facilities shall stop their operation until the Conference participants make a decision. Exception is given to safety-related activities.

In the course of developing the measures for enacting the Convention provisions, the Russian Federation will take into account that the physical destruction of all the equipment, including standard industrial equipment and all buildings associated with the former chemical weapons production facilities, would unreasonably eliminate basic funds that could be used for the consumers' merchandise. Due to the complicated financial and economic situation in Russia, this approach seems to be the most appropriate.

The Convention provides for the fact that, no later than 30 days after the Convention enters into force, every member-country will submit an initial declaration. It will concern the country's chemical weapons inventory. It will concern the country's production facilities that depend on the chemicals used in chemical weapons, as well as on facilities dependent on these chemicals for other purposes, as long as they contain said chemical properties. It will concern information and data regarding the production process, consumption, and import or export of these products. Providing information and data on most of the organic chemicals used extensively in different branches of industry (for example, ethyl alcohol production) is required.

Thus, in addition to the chemical branch, any other industries which use these chemicals, for example, the pharmaceutical, refinery, metallurgy industries, are required to report the existence of such chemicals. I am hard-pressed to think of a branch that does not use them. I am not talking about requested inspections (that is, due to suspicious practices) at any facility without rejection rights in the country; I am talking about regular reports, regardless of whether the facility is private or part of an entity.

This is a difficult task. A number of the Convention member-countries failed to present the required information and data in their initial declarations.

In 1995, the Committee and the RF Ministry of Industry held a seminar with the leading specialists of the basic industry branches. The requirements on declarations, the rights and responsibilities of the organizations and the inspection activities were discussed and explained at the seminar.

This year, we plan to conduct regional seminars for the management of different enterprises. Simultaneously, with the cooperation of the Russian State Committee on Statistics and other entities, work on improving the data base is underway.

This task is difficult due to the establishment of a number of commercial structures and the fact that not all information on their activities goes to the central bodies. In order to resolve the problem, the Committee developed a draft law to implement the Convention provisions in the Russian Federation which, in addition to this task, is regulating the activities of individuals and legal entities and their rights and responsibilities in the course of the implementation of the Convention provisions.

In conclusion, I would like to point out that the CWD process is the task of the local and central authorities, as well as the population and public organizations. We are all in the same boat. Together we will be able to solve this task.

Mamontov, Yu.I., Head of the Department on Rehabilitation of Kurgan Region Territories

CHEMICAL WEAPONS DESTRUCTION PROBLEMS IN SHCHUCH'YE AREA, KURGAN REGION

Ladies and Gentlemen:
Friends:

First of all, I would like to welcome you again to our country and wish you success.

The presence of so many scientists, public and political leaders, environmentalists, military personnel and mass media is evidence of the great public interest in the resolution of an acute problem: destruction of a thousand tons of chemical weapons stockpiled in many countries.

We all realize that the storage of chemical weapons presents more hazard than their destruction. The longer these weapons are stockpiled, the higher the risk.

Taking into account the fact that the CWD process is necessary for the sake our future and the health of present and future generations, the destruction process should cause neither the intoxication or death of people, i.e. the CWD process will be absolutely safe. To ensure safety, continuous monitoring of the CWD process both by the administrations of the stockpiling regions and the public is required. This vigilance serves as the basis of the international Convention on CW Destruction and shall be the basis of our federal legislature of this problem.

Members of the Regional Administration working group who are responsible for coordinating all of the area's CWD activities failed to get access to the storage facility due to the Order issued by the General Staff in 1993. How can we talk about any administrative or public control over the Shchuch'ye stockpile and proposed destruction facility if even these people are denied access? Foreign representatives and inspection groups have access to the stockpile. However, the MOD does not inform the Russians who are facing the problem directly. The secrets, especially rumors, cause incredible gossip.

The Regional Administration shall issue the permit for the CWDF construction. However, how can the Administration issue the permit without knowing what and how many munitions are stockpiled and by what means the munitions are subject to destruction? This problem cannot be resolved positively if the Administration does not conduct an inventory of munitions.

I assume that under current circumstances and with the attitude of the country's military leadership towards CWD resolution, the proposed facility in Shchuch'ye Area, Kurgan Region, is bound to follow the fate of the Chapayevsk facility in its first stages.

I hope that the military representatives and PC representatives at these Hearings will draw appropriate conclusions.

Knowledge gained during visits to the USA facilities, the Chapayevsk training center, and leading scientific institutes working on this problem convinced us that the CWD process could be safely organized. However, is it possible to implement it at the Shchuch'ye stockpile? Only a multilateral expert review of the pre-project and design documentation would be able to answer this question. It is next to impossible to speak about the facility as if the decision has already been made until this expert review, including public experts, has been conducted.

As for the safety issues at these Hearings, I would like to have answers to the following questions: What is the advantage of the two-stage CWD technology proposed for use at the Shchuch'ye facility? What are the criteria for the boundaries of the sanitary protection area and the area of protective activities as the Ministry on Emergency Situations and the Army use different approaches to this problem? What are the maximum allowable concentrations and who adopted them? What are the sensitivity levels for and what is the lag period of the initiation of the control and analytical equipment? How safe are the organophosphorus detoxification products and what organizations approved the conditions of the organophosphorus detoxification products' burial site? To what extent is our rescue service prepared for an accident? By rescue service I mean civil defense service and medicine. How will the problems of personal and social protection be solved? What are the technical guarantees that only the munitions stockpiled at the Shchuch'ye facility will be destroyed and Shchuch'ye Area will not turn into a dumpsite for chemical weapons? There is no need to reference

our Russian laws and the Federal Program Objective, as we are all well aware of how and under what circumstances our laws work.

Considering the knowledge of the reporters at the Hearings, I assume that we will get answers to these questions and see them documented in the expert review materials.

As for the efficiency of the two-stage technology for the CA (chemical agents) destruction, I presume we don't have any reason not to trust the opinion of the Environmental Committee that signed the recommendation to use this technology at the Shchuch'ye facility.

However, it is very important to provide this type of information not only to the Hearings' attendees, but to all Kurgan Region residents. To achieve this goal, it is essential to establish an informational public outreach center. During our trip to Tooele, USA, we saw the effectiveness of such centers.

However, there is one more point we have to consider during the resolution of the Shchuch'ye stockpile problem. This is a social problem we are dealing with. Will a person who for six months does not receive a salary, pension, nor aid for children believe in promise after promise and agree to the construction an the environmentally hazardous facility? No. But it is possible to convince a person who sees evidence of full compliance with the Russian laws. In the current situation, unfortunately, we can't speak about any belief. Until the social situation in the area is improved, it will be next to impossible to convince the population of this facility's necessity. Unfortunately, a lot of things depend not on the local or regional administrations but on the federal bodies.

They are responsible for the development, adoption and implementation of laws. They are also responsible for regulatory documents on social benefits and guarantees for the people working or living in the sanitary protection areas and protective activities areas; regulatory documents on compensation to the population for the damage caused as result of storage and destruction of CW; regulatory documents on the control of storage and destruction processes by the Administration and public of the CW stockpiling areas; regulatory documents on a special status designation for the CW storage and destruction areas; regulatory documents on compensation to the consumers' goods manufacturers working in the CW storage and destruction areas; regulatory documents on the reimbursement for material damage and psychological distress of residents who are willing to leave their place of residence in the area of protective activities.

I would like to discuss one more issue not related to safety. The Tooele project was a pioneer in the CWD process. Shchuch'ye has a good chance of becoming a pioneer of this process in Russia. Therefore, I hope that Tooele County and the Shchuch'ye Area will become sister-cities in the future. This partnership can lead to the beginning of the new era, an era without chemical weapons. I think it would be prudent to make a kind of metal token from re-melted chemical munitions and to present copies to the heads of our countries and the United Nations to house them both in Tooele and in Shchuch'ye.

In conclusion, I would like to express my appreciation to the US for financing these activities and for their attention to our problems.

Petrunin, V.A., GosNIIOKhT Director
Sheluchenko, V.V., GosNIIOKhT Deputy Director
Demidyuk, V.V., GosNIIOKhT Lead Scientist

SAFE, SECURE, AND ENVIRONMENTALLY SOUND RUSSIAN MODERN CHEMICAL WEAPONS DESTRUCTION TECHNOLOGY

Ladies and Gentlemen, Colleagues:

You are well aware that Russia and the US will soon have to proceed with a full-scale chemical weapons destruction process. Naturally, the population living near the storage facilities and the planned chemical weapons destruction facilities are very concerned.

Many specialists know the importance of the international dismantling of chemical weapons. As a result, they have made a number of proposals aimed at using the latest scientific and practical achievements in the chemical weapons destruction process. Approximately one hundred technological options have been proposed.

STATE SCIENTIFIC RESEARCH INSTITUTE OF ORGANIC CHEMISTRY AND TECHNOLOGY (GosNIIOKhT) IS THE PRINCIPAL RUSSIAN ORGANIZATION RESPONSIBLE FOR DEVELOPING THE CHEMICAL WEAPONS DESTRUCTION PROCESSES.

In order to evaluate the quality of different technologies and objectives for further development, GosNIIOKhT specialists continuously study and carefully analyze numerous proposals. Our knowledge and awareness of the root of the problem and the status of different studies in the chemical weapons destruction field allowed us to develop our own technology.

I would like to present the “Safe, Secure, and Environmentally Sound Russian Modern Technology to Destroy Organophosphorus Chemical Agent-Filled CW” developed by GosNIIOKhT.

Brief historical background. GosNIIOKhT has been working on the organophosphorus agent destruction technology since the 1970s because of the growing need to destroy chemical munitions.

As a result, the Soviet Army included the chemical weapons destruction mobile unit in their inventory in 1980.

The methods used were based on the Two-Stage Organophosphorus CW Destruction Technique.

The first stage included detoxification (neutralization) of the organophosphorus chemical agents. The second stage provided for the incineration of the reaction masses generated as a result of chemical agent detoxification. We tested the two-stage technology and munitions demilitarization process at the mobile chemical weapons destruction unit. The test results proved the thoroughness of the chemical agent destruction process, and no environmental contamination was recorded.

The test results showed that the agent-destruction methods and equipment used allowed us to reach our goal, i.e., chemical weapons destruction.

From 1980 to 1987, we destroyed chemical munitions which were removed from the inventory in small quantities. We also improved the following: item demilitarization technology; inner munitions surface decontamination; optimization of the chemical agent destruction process parameters; and environmental safety activities. During this period, about 4000 munitions were destroyed, equaling to 280 tons of chemical agents.

In 1987, in the Shikhany settlement, we conveyed this to the representatives of the countries which were holding negotiations concerning the chemical weapons destruction problem. Despite the positive results obtained in the course of these activities, it was insignificant since the unit didn't fully comply with production standards or with the requirements imposed on the chemical weapons destruction process.

What are the requirements for the chemical weapons destruction technologies being implemented on a production scale? These requirements are specified in the RF President's Decree No. 314 issued on 24 March 1995 and recommended by the US Federal Law PL 102-484. The requirements consider safety issues, environmental protection, and economic efficiency during the technology development and evaluation processes.

Naturally, most of the attention is given to the chemical weapons destruction SAFETY taking into account the RF environmental requirements and norms. The chemical weapons destruction process safety task includes the following sub-tasks: technical and process safety, risk assessment, environmental monitoring and safety, and emergency response systems.

The need to resolve the environmental protection problems urges the Environmental Impact Assessment (EIA) to develop key environmental protection activities. The EIA is analyzing and predicting the impact this will have on the biogeophysical environment and on public health. The EIA is also interpreting and collecting data regarding the

impact that the proposed facility will have. The required environmental protection activities include the expert review of the projects concerning the creation of chemical weapons destruction facilities (including an independent expert review).

Coming up with a maximum allowable emissions standard is the next stage within environmental protection activities. The calculation principles are stipulated in various regulatory documents, such as construction norms and standards and All-Union (Russian) regulatory documents.

The environmental protection activities are guided by legislative norms including: sanitation and hygiene; fire protection and environmental guidelines; technical inspection requirements; and legal commitments. These types of regulatory documents deal with the maximum allowable air concentration levels (Table 1).

Table 1

Maximum Allowable GB, GD, and VX Concentrations for the Operation and Populated Areas*

Russia	USA	Russia		USA	
Agent Description		Operation Area Air, MAC, mg/m^3	Atmospheric Air (Tentative Safe Exposure Level), mg/m^3	TWA** Work Place Limit, mg/m^3	TWA General Population Limit, mg/m^3
Sarin	GB	$2x10^{-5}$	$2x10^{-7}$	$1x10^{-4}$	$3x10^{-6}$
Soman	GD	$1x10^{-5}$	$1x10^{-7}$	$2x10^{-5}$	$3x10^{-6}$
VX	VX	$5x10^{-6}$	$5x10^{-8}$	$1x10^{-5}$	$3x10^{-6}$

* The table is taken from N.I. Kalinina's Article, "On Safety Standards During the CW Destruction Operations." Toxicology News, No. 3, 1994, pp. 6-9.

** TWA – Time-Weighted Average.

Now a few words about ECONOMIC EFFICIENCY. This should be determined by the expenses associated with the implementation of the chemical weapons destruction program as well as social, economic, and environmental aftermath (effects) resulting from said implementation.

As mentioned earlier, the activities involving highly hazardous substances include: sanitation and hygiene regulations; fire protection and environmental norms; technical inspection requirements; and legal commitments.

The regulatory base is the main requirement for developing the chemical weapons destruction process. The studies shall comply with the requirements established by the "Convention on Prohibition of Development, Production, Stockpiling, and Use of CW

and on Their Destruction." It suggests that the chemical agents shall be metamorphosed into a form that precludes their further use in warfare.

A combination of very strict safety requirements and environmental protection issues in our country precludes us from implementing a multi-purpose chemical agent destruction technology, i.e., direct incineration technology.

At the same time, it is necessary to note that the incineration method is based on thoroughly developed technical concepts, and it is widely used not only in the destruction of chemically hazardous substances but also in the destruction of domestic waste products. This may have encouraged Germany, Canada, the US, and Great Britain to select the direct incineration method for chemical agent destruction purposes. Incineration methods have been studied in our country as well.

Taking into account a variety of publications related to the environmental hazard caused by combustion gases, it is necessary to conduct extensive (and costly) research on the combustion products and thermal decomposition of organophosphorus chemical agents so that we may identify and determine the substances causing adverse biospherical effects. This is just one side of the problem.

The second problem concerns how we should deal with the chemical agent incineration technology safety issue. The incineration technology requires a continuous monitoring system for the combustion process itself and a feed unit leading chemical agents, fuel, air, and oxygen to the incineration chamber. The monitoring system should have a highly safe, strict, and securely operating closed loop that continuously supports the maintained combustion operation. If even one parameter breaks down, chemical agents may be released into the atmosphere. Additionally, to continuously support the furnace's operation, a considerable amount of chemical agents is required. This has resulted in special safety requirements for the process equipment, control systems, and environmental monitoring. The listed factors increase the risk and decrease the chemical weapons destruction technology safety level.

It must be noted that the thermo-destruction processes are included in a number of the proposed "alternative" chemical weapons destruction technologies (processes).

Some of them are as follows:

1. Nuclear explosion.
2. Chemical munitions explosion in a closed circuit.
3. Chemical weapons destruction in blast furnaces (metallurgists proposed this method).
4. Chemical agent destruction in a molten-salts mixture at the domestic wastes treatment unit (proposed by the utility services).
5. Several options related to the use of low- and high-temperature plasma to destroy not only chemical agents but also munitions.

6. Adiabatic compression method (use of diesel units) was not only proposed but also tested for GB destruction.
7. Destruction of chemical agent liquid formulas in the liquid fuel engines.
8. A number of proposals to destroy organophosphorus chemical agents directly in the munitions.

This is only a sample list. It is a general overview of the proposals. A high level of efficiency of the thermal destruction processes is guaranteed. However, we must understand that the chemical agent destruction process cannot be considered a technology per se.

Technology refers to a combination of numerous processes designated to primarily ensure occupational safety as well as the safety of the entire destruction facility. It also guarantees the safety of the applied method, minimizing the risks of an accident.

It is well known that the organophosphorus chemical agents are highly organic compounds especially hazardous if they are in the form of vapor or aerosol, i.e., in their active form. All thermal destruction processes include these forms, and therefore, it may result in environmental contamination. It is necessary to note that the high temperature-based processes are not completely regulated. The arguments provided by different specialists about the process equipment safety and efficiency of treatment facilities are not always impartial. Sometimes, this leads to misunderstanding among environmentalists and the population living adjacently to the destruction facilities.

Because of a negative public outreach experience during the planning of the Chapayevsk CW Destruction Facility, Russian specialists decided that in the course of the chemical weapons destruction processes development, it is necessary to include the following:

1. Exclude high temperatures in the chemical agent processing area.
2. Chemical agent neutralization (detoxification) should be carried out in mild and strictly controlled conditions.
3. Exclude chemical agent processing under pressure.
4. The destruction process should involve a limited quantity of chemical agents as this reduces the aftermath of any accidents that may occur.
5. Conduct disassembly of individual chemical munitions with the chemical agent destruction process being interlocked at each stage.
6. Use only the two-stage chemical agent destruction process including the detoxification (neutralization) process during the first stage; reaction mass disposal should only occur during the second stage.

GosNIIOKhT research activities fully comply with the above requirements. GosNIIOKhT specialists developed a safe, secure, and environmentally sound modern two-stage technology to destroy GB, GD, and VX agent-filled chemical munitions. The CWD process is based on the following description.

Individual chemical munitions are processed at the demil machines. The process includes munitions access, CA drain with a vacuum, and munitions shell decontamination. Fast-action gas indicators control the thoroughness of the munitions shell decontamination. Following each disassembly stage, the inner disassembly unit and pipeline surfaces should be decontaminated.

The operating area's air concentrations are continuously monitored with automated gas indicators in accordance with the maximum concentrations level allowed. The decontaminated munitions shells then advance to the thermal treatment process. The drained chemical agent goes to the chemical reactor during the first stage.

The First Stage includes chemical agent detoxification (GB, GD, and VX) with the formation of the reaction mass assigned to Hazard Class III. This procedure resolves one of the key tasks. That is, chemical agents are irreversibly transformed into a benign product. We must emphasize that this process is carried out in a discontinuous mode of operation that include a strictly limited quantity of chemical agents in the process.

In addition, this is a discontinuous process. That is, a new chemical agent batch moves to the destruction phase only after the previous batch moves to the second stage. This type of process arrangement provides for quick chemical agent containment in case of an accident; it also greatly curtails the effects of an accident.

The mild process conditions allow us to apply a widely used, traditional, thoroughly tested, simple, and safe process.

The Second Stage involves reaction mass bituminization. The bituminization process allows us to remove reagents that are returning to the first stage. The bitumen saline masses formed as a result of the bituminization process are assigned to Hazard Class IV in accordance with the Russian Standards, i.e., they are equal to domestic wastes.

Therefore, the selected process and its equipment guarantee both safety and thoroughness of destruction. Multi-purpose types of processes allow us to demilitarize all types of chemical munitions and detoxify chemical agents.

Once again, I would like to focus on the three main principles on which the safe, secure, and environmentally sound modern Russian Two-Stage Technology is based.

Principle 1 – DISCONTINUITY. This refers to the limited amount of chemical agents involved in the process. This quantity is equal to the filling volume of one or several munitions. Chemical agent extraction from the munitions and its loading in the reactor is carried out in a precise manner. This process provides for accidents to be contained promptly. This vacuum-based process considerably decreases the risk of chemical agents being released into the environment. This is an important safety principle.

Principle 2 - BATCH PROCESS. Chemical agents being fed into the neutralization reactor will remain there until the results of the agent-destruction analyses have been confirmed. Only after this is confirmed is the agent unloaded from the reactor and a new portion of the agent is fed into the reactor. Neutralizing reagents are then added, and the process conditions are predetermined to obtain the anticipated reaction. The neutralization process is controlled using various analytical methods. The obtained results are subject to further analysis. Thus, we deal with a stable and controlled chemical process for all types of chemical agents.

Principle 3 – TWO STAGES. This is the basic principle for the chemical agent destruction process. Following the completion of the First Stage, we obtain a Hazard Class III reaction mass. It should be noted that Hazard Class III includes, for example, salt. The two-stage principle ensures environmentally sound technology. In accordance with this principle, the Second Stage includes the reaction mass being fed into the hot bitumen. It allows us to destroy all trace amounts of the agent not involved in the process and to generate a solid Hazard Class IV substance that will be buried at a specially-designated site.

In 1992, Russia and the US signed the Bilateral Agreement on Safe, Secure, and Environmentally Sound CW Destruction. In 1995, for the first time in the history of both countries, a Joint Russian-US Experiment on Evaluation of the Modern Russian Two-Stage Chemical Agent Destruction Technology was conducted within the framework of the Agreement.

Our technology successfully passed a bilateral expert review using both Russian and US chemical agents. In the course of the experiment, modern analytical control methods were used, including cholinesterase analysis and gas chromatography methods. These included various detection systems and biological control methods. None of the modern analytical methods found chemical agents in bitumen saline masses generated as a result of the reaction mass bituminization process.

The technology successfully passed the joint international expert review using both US and Russian chemical agents.

The International Peer Review Committee evaluating the Joint Russian-US Experiment recognized applicability of the two-stage chemical agent destruction method.
In 1995, the RF's MOD proposed a bid for the organophosphorus chemical agent destruction technologies. The Two-Stage Technology developed by the GosNIIOKhT specialists and presented to you was accepted for further development and the creation of pilot facilities. In accordance with the Russian specialists and expert review organizations, the Two-Stage Technology is to be used in Russia. Therefore, it is evident that the selection of the basic method of the modern Russian Two-Stage Technology was appropriate. Bid decisions were made only after analyzing: a vast number of alternative proposals; the evaluating procedures; and reliable scientific results obtained in the course of long practical work including a mobile unit.

Furthermore, it passed the international evaluation using both Russian and US chemical agents.

It is evident that professionals developed the CW Destruction Technology. The technology was thoroughly thought out, and reliable scientific results were achieved. It was tested on live chemical agents around the world and found to be safe and secure. Thus, its selection was merited.

Dear colleagues, the CW Destruction Problem is approaching a new developmental phase. Today, any new alternative approaches to the chemical weapons destruction process will adversely impact our fulfilling international commitments.

Time is of the essence. With each passing day, chemical munitions storage is reaching a crucial point, thus increasing the risk of an accident. We have to speed up our efforts aimed at constructing chemical weapons destruction facilities. Of course, we don't exclude further improvement of the technology-related studies aimed at increasing environmental safety. We are open to consider all professional comments related to any flaws you may find in the present technology. However, we believe that the Russian Two-Stage CW Destruction Technology is currently our best option.

There is still much for us to do. We hope that close cooperation between Kurgan Region population and Administration and Shchuch'ye, will help resolve any difficulties that may exist. We will successfully contend with this tough but honorable task, i.e., to destroy the Shchuch'ye chemical weapons inventory.

Ratushenko, V.G., GosNIIOKhT Department Head

AGENT-FILLED MUNITIONS DEMILITARIZATION TECHNOLOGY

Ladies and Gentlemen, Friends:

The Two-Stage CW Destruction Technology includes various processes. The disassembly process plays one of the key roles in the chemical weapons destruction safety process because of its technical complexity and importance.

The term "disassembly" entails a system of chain operations creating the required conditions to destroy chemical weapons' components separately. The absence of explosives is a specific feature of the Russian munitions. The components to be destroyed include chemical agents, drained munitions shells, and various removable components.

Russian CW include about twenty types of artillery munitions of different caliber, configuration, shell thickness, and structural materials as well as their content.

Strict safety requirements and the various types of munitions make it significantly difficult to develop disassembly equipment.

In the early ‘70s, we took the first steps aimed at resolving this problem. The selected two-stage method consisting of the chemical neutralization (detoxification) process and the follow-up treatment of the obtained reaction masses allows us to conduct the chemical agent destruction operations in mild and highly controlled conditions, providing for the maximum safety level and use of simple and technically sound means. These factors serve as the basis to ensure the maximum safety level during the munitions disassembling operations.

The disassembly safety process is achieved with the help of certain disassembly principles. They include mandatory disassembling operations (munitions access, chemical-agent drain, munitions shell flushing, munitions shell decontamination quality control, etc.) in a ventilated chamber under lower pressure; chemical-agent drain using a vacuum; munitions shell and drain-station flushing with the reagent used for the chemical agent neutralization; etc.

A well-known mobile chemical weapons destruction unit was based on these principles. The destruction process principles were used during its testing. Various munitions disassembly units were used in the course of the testing activities.

The chemical weapons destruction process is performed on a step-by-step basis and involves three stages, including:

1. Preparatory operations stage, including:

- delivery of munitions into protective storage;
- verification and rejection of unsealed munitions;
- extraction of munitions from containers and transporting them to the drill and drain process line;
- dismantling of removable components;
- identification of munitions (for destruction control purposes).

2. Disassembly Stage, including:

- re-verification and rejection of unsealed munitions;
- access to munitions shell;
- draining of chemical agents;
- flushing of the shell with the neutralizing reagent;
- checking the thoroughness of the emptied munitions;
- checking the munitions shell mass;
- collecting and delivering drilling shavings to the decontamination station.

3. Thermal Treatment Stage, including:

- munitions shell metal treatment;
- container and shavings metal treatment;
- munitions shell destruction (for example, chopping) and their transport to the metal scrap storage area.

This significant number of chain operations within the chemical weapons mass destruction process requires the use of a conveyor. Taking into account the hazardous type of work this entails, it is necessary to prohibit people from being involved in these activities whenever possible.

We partially accomplished this during the creation of the Chapayevsk facility having developed an automated demilitarization conveyor for the tube-fired and rocket artillery munitions.

This task was resolved only partially because the operating personnel had to load munitions shells into metal furnaces and then unload them from the furnace.

During the creation of the line equipment, we attempted to comply with the following principles:

- automate hazardous operations;
- isolate hazardous operations' premises from the process premises using ventilated chambers;
- continuously conduct automated air monitoring in the hazardous operations' areas;
- drain chemical agents and neutralization products and transport them along the pipelines using a vacuum;
- use draining devices to drain chemical agents and prevent their penetration into the environment;
- perform munitions shell decontamination and draining operations immediately after the chemical agent drain-off;
- ensure complete control during the chemical agent draining and munitions shell decontamination operations;
- maintain the draining system containment prior to operations.

As a result of the activities performed in Chapayevsk, a rather significant stage in the creation of a special chemical weapons destruction equipment was completed, i.e., experimental automated equipment testing. It included demilitarization equipment development, its manufacture, and systemization at the facility as well as testing using simulants. At the preceding stage, during the field-test of experimental mechanized equipment using live agents, we obtained sufficient data on demilitarization of real munitions. We also tested various operations, different process units, and devices. At this stage, we tested the principles of construction and the structure of automated systems, so that we could make recommendations for the mass chemical weapons

destruction facilities. The task was completed, and our data allows us to propose concepts for the main demilitarization equipment created at the Shchuch'ye Facility.

How do we envision this equipment?

Based on the Chapayevsk experience, we considered several options of the demilitarization equipment. Out of these, there are two options we propose to be used at the Shchuch'ye Facility.

First of all, these operations provide for complete automation of all chemical weapons destruction, from loading the munitions on the preparatory operations conveyor to transporting munitions to the scrap metal depot following the metal treatment. Therefore, all of the process equipment is combined into one system called the automated demilitarization process line.

The automated munitions demilitarization process line (85, 122, 130, and 152 mm in diameter) and rocket munitions warheads (122 and 140 mm in diameter) includes the unpacking stage, the stage of preparatory operations, and demilitarization stage.

The line throughput is expected to be from 40 to 50 munitions per hour, depending on the munitions caliber.

The process line provides for special non-disposable metal containers to deliver munitions to the facility and for their protected storage. The container structure allows for the automated operation to unload munitions from the container using robotics.

A munitions geometry and weight control should be carried out in the munitions demilitarization preparation area (airlock chamber) to register and control the munitions destruction operations.

Unlike Chapayevsk, our process line will have two demil machines in a single structure with the help of the automated handling unit. It will double the line throughput. The links between two demil machines are flexible, i.e., we can operate them either separately or simultaneously.

Each machine is similar to the Chapayevsk option.

The demil machine has a carousel with seven stations for securing the munitions. In one rotation, the munitions continuously move along the conveyor which involve the following operations: loading/unloading, access, chemical-agent drain with its follow-up flushing using a neutralizing reagent, and verification of the complete decontamination of the munitions shells.

The automated handling unit is a four-position rotating unit continuously loading munitions coming from the loading conveyor to the demil machines and unloading

decontaminated shells onto the unloading conveyor. The loading/unloading manipulator was tested at the Chapayevsk facility.

Munitions access unit. The unit's main function is to drill a 15-20 mm hole in the munitions shells. We are considering two options for the structure of this unit. The first option is a thoroughly tested drilling unit using highly efficient drills. The second option is a three-step drilling process.

A hole is drilled in the munitions shell. A 0.5-1.5 mm-thick strip is formed between the end of the drill and the inside of the shell. Then, the hole is treated with a countersink or side cutter which allows the removal of the conical part of the hole. Now, the strip is 0.5-1.0 mm thick. After that, the remaining part of the strip is punched out by using a wedge.

The operations described above are conducted at three different stations. The first and second stations are equipped with a working table with drilling and cutting heads. The third station has a press.

The shaving stations have a magnetic shavings collector. Similar types of units proved their potentiality in Chapayevsk. The collected shavings are transported to a bunker. Then, they go to a container where the shavings are treated in the metal furnace. The shavings that are transported to the container are packed with the aid of the press. The container is then transported along the unloading conveyor into the furnace.

Following the hole formation, the munitions go to the drain station. During this operation, a draining sealed device is mounted on the hole. This device is damped in the rotating mechanism area. It is then connected by pipelines to the nitrogen ventilation system and draining system including holding tanks, valves, and control instruments. Following the draining unit containment check-up (by the vacuum level in the draining system), the munition is turned with its hole facing down, and its content is emptied into the holding tank which has a vacuum inside. Corresponding detectors determine the thoroughness of the operation. The drained shell is rotated to its original position. Via the nitrogen ventilation system, it is filled with the reagent consequently used for the drained chemical agent detoxification. The reagent is drained in accordance with the plan described above. This series of operations prevents chemical agent accumulation in the draining system without considerable demilitarization rate decrease.

Following the flushing, the munition is forwarded to the control station. It represents an additional safety measure which prevents any process malfunctions. The decontaminated shell is unloaded from the unit and is transported to the thermal treatment station. The conveyor used for the shell of the demilitarized munition is transported to the furnace covered with a metal casing and equipped with a mass measuring device. A liquid/gaseous fuel-fired furnace is used. This furnace has an exhaust gas afterburner. The furnace operation system allows the munitions shell to be

heated to 500°C. Following thermal treatment, the heated shell can be transported to the deformation station marking the final munitions destruction stage.

Let's look at the automated demilitarization process line for the rocket munitions' warheads with 220 and 240 mm caliber. The expected line capacity for 240 mm warheads is 20 items per hour. As for the 220-mm warheads, the line capacity is expected to be 10 items per hour.

Unlike the earlier concept, this demilitarization machine has a linear structure. The munitions treatment is carried out at three process stations: access, drain, decontamination and monitoring of residual contamination. All the stations are located inside a ventilated chamber equipped with a drip pan and an emergency treatment system with a decontaminating solution. The munitions are moved along the working stations with the help of a walking-beam reciprocating conveyor.

The munitions access operation is performed in accordance with the method described above.

The chemical agent drain device and the drained shell decontamination device are different for this unit. The rotating device has a metal jaw form holding the munitions shell following the operation where the drain device is pressed against the munitions surface in the hole with the sealant. In this position, the munition is safely fixed with the levers actuated by the screw-gear.

During the munitions drain operation, as well as during the decon solution flushing operation, the rotating device oscillates acting as a balance. The drain, decontamination, and control operations are similar to the ones described above.

In order to achieve a higher throughput level, the demilitarization unit has doubled the number of its drain and decontamination stations.

This structure has many advantages. It ensures an appropriate access to any unit device located inside the protection chamber for its maintenance, fixing, and replacement operations. The unit size is considerably smaller than the carousel unit size. The munitions transposition mechanism for the process lines facilitates the maintenance activities.

The thermal treatment equipment is similar to the equipment used for the first process line. We believe that the thermal treatment equipment can be the same for both lines, including the metal furnace, loading and unloading conveyors, as well as charging and discharging devices.

I would like to briefly describe the basic principles of the automated control system.

As previously mentioned, the chemical munitions destruction process involves a variety of processes, some of which can be characterized as hazardous.

To increase the chemical weapons destruction safety process, it is necessary to use a modern automated control system. This type of control system will allow us not only to operate the units but also to monitor the status of all the equipment at any moment. I am speaking of the diagnostic functions utilized by the control system. The control system containing these functions will allow us to detect equipment malfunctions in a timely manner, determine the source of the hazard and, probably, the cause of the malfunction. The automated control system should be a computer-based system including a sufficient amount of sensors to collect information on the operating equipment.

Taking into account the Chapayevsk process line control system, the control system for individual process lines should include the interrelated automated local control systems for units and stations built on a two-level principle.

The local automated control systems should be computer based to ensure the equipment's regular operation and to obtain sufficient data on the process in progress.

To increase the automated control system safety, it is intended to double the amount of controllers, sensors, detectors, and alarms.

The programmer controllers belong to the lower level of the automated control system related to the application of the algorithm for the automated unit operation.

The next computer-based process line level allows us to exercise a number of various functions including the following basic ones:

- coordination of all process line local systems operation;
- data gathering, processing, and presenting related to the progress made and the status of the control units. The information should be issued in an appropriate graphic or text form as well as in hard copies;
- filing the gathered information and preparing deliverables on the operation line;
- location and time setup for analyses of the line operation malfunctions and recommendations on the normal operating system recovery;
- munitions destruction control including the conformance of the munitions to be destroyed at the process line with the list of munitions and their parameters (configuration, weight, chemical agent quantity); record the number of destroyed munitions.

The presented material proves that the chemical munition demilitarization safety process can be accomplished due to the developed demilitarization principles which served as a basis for the demil machines development, design, manufacture, and testing.

Grigoriev, S.G., Department of the Commander of the radiation, chemical and biological protection troops.

ACTIVITIES TO ENSURE SAFETY OF SHCHUCH'YE AREA RESIDENTS DURING THE CHEMICAL WEAPONS DESTRUCTION OPERATIONS

Dear co-chairmen of the session:
Dear attendees and colleagues:

Personnel, population and environmental safety are given unconditional priority in the implementation of the Dedicated Federal Program called "RF CW Inventory Destruction". Research facilities, ministries and agencies, as well as people in academia are working to offer a solution to this problem, while the Ministry of Defense (MOD) coordinates the entire activity. Ensuring population safety during CWD operations depends on a variety of safety factors -- storage safety, destruction safety, including facility safety and the safety of the chosen destruction method, and, in addition, the emergency preparedness program itself, developed by the Civil Defense framework and the Ministry of Emergencies. In part, safety issues have been covered by process designers. Their remainder will be addressed in the course of the Hearings. I would like to highlight the basic safety assurance policies as developed and followed by the MOD. Our policies stipulate that the CWD safety assurance concept relies on the interaction of the following main components -- the emergency/risk hazard forecast, the engineering safety assurance (that is, process safety, air monitoring, environmental monitoring, and establishing emergency response systems at the CWD facilities). The purpose of the CWDF hazard forecast system is to provide a comprehensive assessment of the facility's potential hazard, encompassing the social, political, environmental, technical, medical, biological, psychological, economic, and international aspects of chemical weapons destruction.

The CWDF risk assessment is stage one of the facility safety survey that involves identifying undesirable events, determining their probabilities, and estimating individuals and group risk as reflected in risk charts showing the hazard realization scope and human categories exposed to this hazard. In risk assessment, we identify the occupational risk to facility personnel, the anthropogenic risk to individuals and the population as a whole, the environmental risk to flora and fauna, as well as the potential suicide risk in CWDF site areas. Risk factors are estimated through sophisticated mathematical methods that include calculations, expert reviews, and statistical analysis of data from similar hazardous chemical facilities. The monitoring system composition reflects the three environmental elements to be monitored. These are the human element; the abiotic element, i.e. water, soil, and air; and, finally, the biotic element, i.e. flora and fauna. Accordingly, monitoring includes three major items:

human health monitoring, technical monitoring, and environmental monitoring. An important problem in safety assessment is investigating environmental issues with a view to reducing the adverse environmental impact of the CWDF. To this end, the following must be completed: an environment status assessment, a facility operation environmental forecast, an expert environmental review of the facility and design documentation, as well as environmental monitoring of the CWDF site area.

At the previous session, a question was raised on the comprehensive examination of the Shchuch'ye neighboring area. It is our understanding that in accordance with the President's Decree No. 314, this work is underway in Shchuch'ye Area. Once we figure out how large the protected zone should be, and whether it extends to the neighboring areas, a similar examination will be initiated in the Shumikha area.

A key element of the safety assurance system is the emergency response system aimed at preventing any kind of toxic impact on the facility personnel and the general population, and also at accident containment, keeping accidents under control, and managerial and engineering damage control. The state-of-the-art approach and the way this system has been previously deployed provides for such a system to comprise a control sub-system, an emergency alarm system, an accident containment subsystem, chemical, fire, medical, utilities, and transportation support, and a communication, public address, and security and access control subsystem. These approaches were first implemented at the Chapayevsk CWDF, that subsequently underwent conversion. A number of accidents were assessed in view of these concepts. Some of the results are presented in the viewgraphs. The accepted, say, Dutch, standards consider a risk rate of 10^{-8} to be acceptable while 10^{-6} is considered critical. Within the range between 10^{-6} and 10^{-8}, decisions on operating hazardous facilities' are adopted based on a number of other business and financial factors. This viewgraph shows the safety assurance program developed at the Chapayevsk facility. I will not dwell on this, because process designers have covered most of this ground. An emergency facility operation program has been put together and reflected in a variety of management standards and regulations, as well as technical specifications. To ensure protection for the general population in an emergency, we have an MOD/ Ministry of Emergencies special cooperation plan in place with both a vertical and horizontal interface involving local entities that are part of the All-Russian emergency response system.

The basic population emergency protection principles are described below.

The first principle is a continuous, efficient, and flexible emergency control system. The second is an immediate emergency response capability. The third, full and timely compliance with the emergency activities management plan. The fourth, a comprehensive approach to general population protection, and volunteer group readiness. The fifth, a focus on protecting the population's life support activities. And the sixth, accident containment, cleanup, and remedial actions. A key issue of population safety is the psychological preparation of the population. Public outreach

programs, the dissemination of handbooks, brochures, and other visual aids are means to accomplish this task. Finally, I would like to again underscore that once we complete the above-mentioned tasks, this will set the stage for population safety in emergencies at CWD facilities.

This is a principal area of the implementation of the Federal Program that is funded with upwards of 300 billion rubles. For example, the MOD is in the middle of an extensive public outreach effort in this direction. Beginning in 1993, the MOD and the editorial board of a renowned Russian chemical magazine (founded in the mid-19th century by D.I. Mendeleyev) began joint production of dedicated annual CWD issues, where scientific and practical approaches of the leading US and Russian experts are popularized.

Shenfeld, B. Ye., Director, UralNII "Ecology"

COMPREHENSIVE ENVIRONMENTAL, MEDICAL, AND SOCIAL EVALUATION OF THE CONDITION OF SHCHUCH'YE AREA IN CONSIDERATION OF THE EVENTUAL IMPACT OF CHEMICAL WEAPONS DESTRUCTION FACILITY

The present report was made in pursuance of a resolution on the procedure for conducting a comprehensive evaluation of the condition of the territory of Shchuch'ye Area of Kurgan Region as of September 4, 1996 approved by A.N. Sobolev, the Head of administration of the region and V.I. Kholstov, acting commander RCBDCOM, Russian MOD.

The report is aimed at carrying out, based on available records, the analysis and evaluation of the current condition of the natural and social environment, and public health in Shchuch'ye Area in view of the existing sources of anthropogenic impact and the tentative forecast of the eventual impact of the proposed economic activities on the evaluation targets.

Information and records obtained from Kurgan Region administration, including special designated agencies for environment and health protection were used for this purpose, in accordance with the job we were tasked with.

The preliminary forecast of eventual impact of the scheduled economic activities was made relying on the use of the information on the projected anthropogenic impact obtained from the general designer - AOOT "GiproSINTEZ".

The following factors were considered to be analysis and evaluation targets:

- social and economic environment of the population in Shchuch'ye Area;
- sources of anthropogenic impact within the framework of the existing system of accounting and control;
- abiotic components of the natural environment, namely, the climate, geology, hydrogeology, morphology, hydrology;
- biotic components, namely, soil, flora and fauna;
- public health in Shchuch'ye Area.

The evaluation of the materials acquired showed that the area has not been keeping track of all the sources of environment pollution; the condition of the air, surface and underground waters is not monitored on a regular basis; for any practical purpose, no studies have been undertaken of the biotic components of the environment from the standpoint of anthropogenic impact. To acquire additional information and get an insight into the condition of Shchuch'ye Area, we proposed a program for research and analytical work. Nevertheless, the analysis of material available enabled us to identify a number of problems and propose ways of resolve them. The problems we anticipated to be the most important have been elaborated in this report.

EVALUATION OF SOCIAL AND ECONOMIC ENVIRONMENT

As of 1996, the area's population was 29.7 thousand. The present demographic situation is characterized by intensified adverse trends resulting from a transition to population reproduction under a tapered pattern in 1991. This trend is characterized

by: natural decline, reduced of birth-rate, a growing negative balance of migration, and other processes. In 1996 the population's natural decline was as high as 7.5 per 1000 residents, which is 1.5 times higher than the average Russian value. The basic factor contributing to the population's natural decline is the low birth-rate, which dropped by more than half as compared to 1985, reaching 8.6 new-born children per 1000 residents.

Rural population accounts for two-thirds of the area population. The single urban settlement - area center Shchuch'ye, is a small town, that has practically not been developing. For 30 years, its population has been stable at 10.8 thousand. Over half of the area population (53.3%) is of employable age. The employment of population (61.3% of the total numerical strength of labor resources) is considerably lower than the average value (68.9%) for the region. The progressive decline in employment rate is far ahead of the national figures which adds to the urgency of this problem.

The use of land resources is the basis of Shchuch'ye Area economy. This is a predominantly agricultural area, with the percentage of arable lands as high as 76.6%.

The agricultural production experiences grave difficulties in transition to market economy which result in a gradual decline - the dropping yield of farm crops, reduced cultivated areas, declining number of cattle stock.

The industry is mainly concentrated in Shchuch'ye: a bread-baking factory, a creamery, food-processing complex, a machine-building plant, and others. This is an inadequately diversified agroindustrial complex of local significance. The current trends of dropping sales, reduced utilization of production areas, the lack of internal sources of financing (capital investments per capita are lower than the average Russian level by a factor of five) contribute to evaluating the industrial production as being in a critical condition.

While construction, public catering, service facilities exhibit negative trends transportation, communications, and banking exhibit some positive development trends,. Thus, the number of motor pools has grown by a factor of 1.2, the number of vehicles - by a factor of 1.4, and phone availability - by a factor of 1.2.

Over the last five years, the commissioning of housing has dropped by a factor of 4, and commissioning of newly-built production facilities is virtually non-existent. The population's declining purchasing power has resulted in a decline, on an average by 20-30%, in the number of retail, public catering and service facilities

Education facilities employ 9.4% of the total population of the area. In 1990-1995, the number of educational facilities dropped by a factor of 1.2. Adverse trends are observed in public health institutions: the number of hospital beds for the same period has dropped by a factor of 1.4 while the number of physicians and intermediate medical personnel had diminished. The average provision of one tenant with general dwelling area amounts to 16.4 m^2, over the last five years, the general dwelling area has been growing at a rate of 0.9% a year. The last years saw a reduction in availability of housing with modern amenities: tap water, sewerage and centralized heating.

From all of the above, we can infer that, in 1991-1995, the area's production and infrastructure were gradually going downhill.

EVALUATION OF EXISTING SOURCES OF ANTHROPOGENIC IMPACT

The existing sources of anthropogenic impact were evaluated based on data available through the current national statistics system. According to these data, 50 enterprises located within Shchuch'ye Area discharge about 60 kinds of pollutants to the air, including those belonging to hazard class 1 - vanadium pentoxide and lead compounds. As production declined, the total volume of emissions dropped from 9,000 tons in 1992 to 5,000 tons in 1996. The largest pollutant emission occurs in Shchuch'ye that accommodates almost half of the area enterprises. The largest contribution to the sum total of atmospheric pollution is made by the production department of housing and communal services facility that operates a number of boiler-houses. Based on the analysis of national statistics, the main pollutants are the products of fuel combustion: carbon oxide, ash, sulfur dioxide, nitrogen oxides, hydrocarbons. These substances are released by the numerous coal and fuel oil burning boilers. Based on our estimates of hazard factor, the most hazardous substances are lead and its inorganic compounds, vanadium pentoxide, nitrogen and sulfur oxides. Motor vehicles are a major source of lead pollution. Over the last five years they accounted for 35-40% of the total volume of atmospheric emissions.

The pattern of environment pollution by pollutants discharged with waste waters is determined by the peculiarities of water use that has evolved in the area. Underground waters are the main source of water supply for the enterprises and population of Shchuch'ye Area. About 40% of water is obtained by consumers from the water pipelines, the remaining part - from their own water intakes. Most of the area settlements do not have a centralized water-supply and sewerage system. The main method of waste water draining is disposal onto the terrain: 74% of the volume of waste water is thus discharged. The total average annual volume of waste water discharged in the area amounts to nearly 540,000 m^3. On an average, only 20% of liquid effluents are subjected to purification, since only 3 water users in Shchuch'ye Area have any pollution abatement systems. Predominant pollutant component are readily-oxidizable organic compounds, mineral salts, suspended compounds and ammonium-derived nitrogen, which produce the adverse action on the quality of underground and surface waters.

Another group of sources of anthropogenic impact are industrial/consumer solid/liquid waste disposal sites. Waste producing sources in Shchuch'ye Area are industrial and agricultural, and service entities. The available government statistics on operating facilities is not adequate to get an idea of what the true condition of industrial waste disposal is. According to the statistics, the waste contains hazard class 1 compounds: mercury-vapor lamps, galvanic waste, solvents. The area has 90 waste disposal sites (dumps, manure-pits, ash-slag heaps, animal burial grounds, etc.). These sites have no facilities whatsoever, they present environmental, sanitary and Epidemiological hazard. The Shchuch'ye municipal dump for industrial and domestic liquid waste that is practically 100% full. poses a threat in terms of a possibility of emergency discharge. There is no environmental monitoring of any kind in waste disposal sites.

EVALUATION OF NATURAL CONDITIONS

The analysis of the area natural conditions was carried out primarily to evaluate the environment's environmental capacity. As proved by investigations, the area's climatic conditions do not ensure adequate self-cleaning of the atmosphere; the worst conditions facilitating the accumulation of pollutants appear in winter. The calculations of atmospheric pollution capacity showed that the southern and western parts of the area (the MAP values range from 3.0 to 3.3) are the ones least capable of air self-cleaning. The Chelyabinsk industrial complex produces an additional adverse effect on Shchuch'ye Area, especially on its western part. The level of actual air pollution cannot be estimated because of the lack of regular atmospheric air monitoring

The area's water resources are deficient and of poor quality. They are rather unevenly replenished over the year: the spring flood accounts for 50% of the run-off; in the summer and fall low water period only 7% of the precipitation replenish the existing water reserves, while evaporation accounts for the remaining 93%.

The largest river Miass is gravely polluted by transit waters of the Chelyabinsk industrial complex and has low flow rates. The resources of underground water, being practically the single source of water-supply in the area, are very limited. By virtue of the lithological features of the rocks, the underground waters are inadequately protected against pollution, therefore they have enhanced concentrations of nitrates, nitrites, ammonium and petroleum products. With a long-time exploitation of the water intakes, polluted waters from the overlying formations may be drawn down, and saline waters from the underlying formations may be drawn up; in addition, the polluted water from the river Miass may flow in. The combination of a slowed-down water exchange, an intense evaporation, and an insignificant run-off, that is unevenly distributed over the year facilitate the accumulation of pollutants in the soils, bottom sediments and waters.

The soils in the area are characterized by a high potential for soil accumulation with respect to technogenic impact and weak destructive activity with regard to the mineral pollutants. The irrational exploitation of soil resources combined with unfavorable natural conditions results in a reduced environmental capacity of the soil cover and its pollution resistance. The available data are indicative of the high level of pollution of the soils in the area with nickel (9.5 MPC), cobalt (2.2 MPC), zinc (3.5 MPC), copper (10.4 MPC).

The vegetative cover, with forest vegetation playing a leading part, is one of the principal environment stabilizing factors. However, currently, the percentage of wooded tracts in Shchuch'ye Area (19%) is considerably lower than the indicator (30-36%) that should be characteristic of protective forest strip zone encompassing Shchuch'ye area. In addition, the condition of forest resources is assessed as unsatisfactory.

Hazardous engineering and geological processes and phenomena are observed in the area: aggressive soils and underground waters, subsiding, swelling and quicksand beds.

Thus, the geographical position, moisture deficiency, and low self-cleaning capability of this area pre-determine the environment's instability to external impacts and its low environmental capacity.

EVALUATION OF THE CONDITION OF PUBLIC HEALTH

The condition of public health was evaluated on information data bases of morbidity rates covering a five-year observation period (1991-1995), for various groups of population (children, adults, teenagers).

The analysis of the data showed that the children of Shchuch'ye Area have substantial health disorders as seen over 5 years in a considerably increased rate of blood diseases and hematogenic organs' diseases, skin diseases, diseases of the osteomuscular and urinary systems, as well as with the high level of infectious diseases, endocrinological diseases of the system, congenital development defects, and mental disorders.

Among teenagers, the number of respiratory and urinary tract diseases, blood and skin diseases has grown by a factor of more than 3. From this, one could infer that somatic morbidity tends to become chronic, since the problematic disease groups of teenagers follow the alarming pattern of morbidity in children.

The general adult morbidity has been fairly stable over the last few years

Since health condition is an integral indicator, the observed health disorders must have resulted from the comprehensive impact of social, economic, environmental, genetic, and other factors. Cause and effect link between public health condition and said factors can be established by conducting a public health examination and identifying the totality of the population's living conditions.

RECOMMENDATIONS FOR SOLVING THE EXISTING PROBLEMS IN SHCHUCH'YE AREA

From the above, it follows that an unfavorable environmental condition is observed in Shchuch'ye Area. Therefore, the introduction of any additional technogenic action without carrying out the environmental rehabilitation of the area will aggravate the existing situation. In its turn, the environmental rehabilitation directly depends on the development of local economics that should be ensured by the requisite investments.

The following rehabilitation steps should be considered:

- switching transportation power plants to fuel gas;
- switching motor vehicles to unleaded gasoline and fuel gas;
- construction of the new water and gas pipelines;
- setting up a centralized water consumption and water diversion system;
- construction of pollution abatement systems for industrial and domestic liquid effluents;
- construction of local pollution abatement systems at area businesses;
- construction of specialized facilities for placing the waste of production and consumption;
- recultivation of the existing dumps that are not fit for use any more, and other waste disposal locations;
- performing reforestation and forest protection work.

Rehabilitation steps may also include the establishing of environment monitoring on a regular basis, expanding the network of medical institutions and staffing and equipping them.

PRELIMINARY EVALUATION OF THE IMPACT OF THE PLANNED ECONOMIC ACTIVITY ON THE STATE OF SHCHUCH'YE AREA

The results of analysis of the data submitted by the general designer AOOT "GiproSINTEZ" showed that under normal operating conditions of the designed facilities, changes may occur in the anthropogenic impacts considered earlier. Positive changes include the following:

- putting into operation the new boiler-houses working on gas and at the same time, shutting down 19 boiler-houses burning coal and fuel oil, emissions of sulfur dioxide, carbon oxide and solid substances, resulting from the combustion of solid and liquid fuel will be fully eliminated, of ash and slag waste will no longer accumulate;
- provided that water users in Shchuch'ye will be tied in the designed sewerage systems, the discharge of pollutants to natural water bodies will be considerably reduced;
- the design calls for the construction of an industrial waste burial ground and a solid domestic waste disposal site.

At the same time, however:

- new components (among them, four hazard class 1 compounds) will emerge in atmospheric emissions that were not previously released in Shchuch'ye Area;
- construction of the facility will result in the intake of underground waters of the Chumlyak water intake increasing by a factor of 3.7.
- the submitted materials contain no information on any intended recultivation of the current dump areas, thus, the unsanitized disposal sites will continue to present an enhanced environmental hazard;
- the operation of the facility will be accompanied by an increased waste formation: 4.5 tons of waste per one ton of destroyed chemical agent.

A preliminary assessment of possible environment changes showed the following:

- the facility will have an impact on such elements of geological environment as soils and underground waters; and in addition, the quality of underground waters will deteriorate because of the extra water resources withdrawn, by virtue of the specific hydrogeological conditions;
- if industrial facilities are located in the area, there is a likely risk of underground waters becoming polluted in the vicinity of the Chumlyak water intake;
- as regards the interaction between structures and soil beds the problems may arise in view of the presence in certain areas, soils featuring adverse engineering geological processes and phenomena;
- within the limits of the industrial zone, biotic components are completely deprived of their environment forming and resource function early on in the construction phase;

- based on the specific emissions range, a growing biological activity of the soil pollution is predicted in the impact area of the industrial zone.

With regard to social and economic living conditions, both positive (area's rising importance in regional economics, expanded opportunities to satisfy social and economic needs of the population) changes, and negative ones are likely, for instance, the facility's vague development prospects, considering that its activity is projected to span 5.5 years, regardless of construction.

Our investigations have enabled us to come up with a number of recommendations the possible impact of the planned economic activity. The following seems to be advisable:

1. Construction and putting into operation of social infrastructure facilities on a top priority basis.

2. Completing an environmental expert review of the proposed technology along with an evaluation of alternative technologies of chemical weapons destruction.

3. Performing a detailed assessment of the likelihood of emergencies and their evolution.

4. Identifying the direction for the conversion of production early on in the design stage.

Vasilyuk, Ye. G., Chairman of the State Committee on Environmental Control of Kurgan region

APPROACHES OF THE KURGAN STATE COMMITTEE ON ENVIRONMENTAL CONTROL TO THE PROBLEM OF CW DESTRUCTION

Dear participants of the Hearings!

It is symbolical that on the threshold of the third millennium the governments and peoples of the largest countries of the world came to conclusion that from the stage of stockpiling of the weapons, among them the most hazardous - nuclear and chemical ones, it is necessary to go over to the stage of their destruction.

Sharing the urgency and importance of this problem, the State committee on environmental control of Kurgan region, by virtue of its professional specificity, actively joined in the process of preparation of destruction of CW on the territory of our area.

Recognizing the high potential hazard of the process of chemical weapons destruction, proceeding from the interests of protection of the Nature and Man, taking into account the sad experience that entered as a black page into the world history of consequences of the Chernobyl NPP, Production Association “Mayak”, Semipalatinsk and others, instability of economics of the country, from the beginning of preparation, having united the efforts of the nature protection alliance, we have formulated and presented our proposals to the administration of Kurgan region, regional Duma, Ministry of Defense of the RF, State Duma, Federation Council, Ministry of protection of environment of the RF. All our proposals are based on the acting legislation.

Our approaches to the solution of this problem are as follows:

Development and passing of the laws of the RF regulating the order of preparation and destruction of CW that guarantee the selection of the safe technologies of destruction of CW on the alternative basis, the obligatory state and public ecological examination of the experts (including the technology of destruction of CW);

- approval of the normative and legal basis for monitoring emissions (discharges) of pollutants formed in the process of destruction of CW and in case of emergency emissions;
- organization of ecological monitoring with the use of the up-to-date monitoring means providing detection of chemical agents with the concentrations below MPC of the air in the inhabited localities and fish-farming water tanks;
- guarantees that this facility (plant for destruction of CW) will be dismantled on completion of the main task or used for solving “peace” tasks, for instance, for utilization of mineral fertilizers and toxic chemicals removed from production;
- guarantees of ecological rehabilitation of the area where the facility for destruction of CW is located.

The Constitution of the Russian Federation stipulates the right of the residents to live under good ecological conditions, therefore along with the ecological demands we put the following requirements:

- on the necessity of adoption of the Law of the Russian Federation on social guarantees given to the population residing on the territory where chemical weapons will be destroyed;
- on granting the residents the right to choose another place of residence with payment of the compensation prior to implementation of the Program;
- on top-priority construction of the social infrastructure objects in the area of destruction of CW.

To avoid the errors that may be of irreversible nature, we demanded that before taking the decision on choosing the site for construction of the facility for destruction of CW the comprehensive evaluation of ecological sanitary, epidemiological and social state of Shchuch’ye area and project of impact of this facility on the environment be made.

These proposals were made many times at all the conferences devoted to the problems of destruction of CW and timely submitted to the State Duma to be included to the laws of the RF.

And what we have for today? We haven’t got the legislative basis that could fully provide the execution of the works for destruction of CW. In place of a package of the laws fully meeting the solution of the problem for destruction of CW, we have, as the deputy of the State Duma A. M. Makashev said, the so-called base Law of the RF “On the destruction of CW” that cannot serve as the basis for taking concrete steps so as to implement the program. It should be supposedly followed by other Laws of the RF containing the guarantees that we demand from the State on behalf of the population of the territories where the weapons are stored. When will they be passed? Why they haven’t been passed together with the so-called base Law - we could only guess. Practically each of the articles of those Laws that did not pass should be supported by

allocation of the resources from the budget or other sources. We understand that today, when the money is allocated with such efforts to cover the debts for pensions, to the workers of the budget-supported sphere, when the problems of sequestering of all levels become the most important thing, the financial support of the Program for destruction of CW is problematic. It is quite probable that partially because of this reason the Federal purpose-oriented program for destruction of CW (called the President's program) in violation of the Law of the RF "On the ecological examination" hasn't been submitted for this examination. The comprehensive evaluation of the state of Shchuch'ye area carried out by the Perm institute of industrial ecology characterizes the situation in the area as unfavorable and recommends that the ecological rehabilitation of the area be made.

The project of substantiation of investments submitted by the Ministry of Defense for coordination needs essential revision. The main point is that the technology of two-stage processing envisaged by the project didn't undergo either public or state ecological examination. The tests of technology haven't been carried out under production conditions. The hazard class of the substances formed in the process of destruction of CW hasn't been determined, their MPCs haven't been established, there are no methods for monitoring the contents of these substances in the environment. The devices for monitoring the atmospheric air to be installed according to the project can operate only in the working zone. These devices don't determine the concentrations of the chemical agents at the level of MPC of the air of inhabited localities.

Taking into account the above-said and the fact that, according to the specialists' opinion, the munitions of the Shchuch'ye arsenal are in satisfactory hazard condition at the present time, a question comes to mind - what is the necessity, without having neither legal nor financial and technological decisions, to start implementing such a serious business? Wouldn't it be wiser to allot 60-80 billion rubles to the Shchuch'ye troop unit for performance of the measures so as to secure the safe storage of the chemical weapons and system of monitoring the environment and at the same time to solve a complex of the said problems (i.e. legal, technological and financial).

I make a proposal to be included to the concluding document - it is possible to continue the works on destruction of CW only on condition of:

- provision of the guarantees of the Government of the RF about 100% financing of the works on destruction of CW. To do this, the State Duma should pass the appropriate law;
- semi-industrial checking of the technology of destruction of CW on the proving ground designed for these purposes;
- carrying out the State and public examination of the technology of destruction of CW, and its inclusion in the program of investments project only after positive conclusion;
- correct the investments project with consideration for the ecological situation in Shchuch'ye area, taking as the basis the conclusions and proposals set forth in the work of the Urals State research institute of regional ecological problems

"Comprehensive ecological, medical, social evaluation of the territory of Shchuch'ye area with consideration for possible impact of the facility for destruction of CW";

- positive conclusion of the State ecological examination of the investments project for destruction of CW;

- additional study of the state of ecological situation in Shchuch'ye area with consideration for trans-boundary transfers.

Stolov, A.S., Block, V.G., GIPROSINTEZ Institute, Volgograd

BASIC CONCEPTS RELATED TO CONSTRUCTION OF THE CWDF IN SHCHUCH'YE AREA

I work for an organization whose main objective and task up until 1987 was to design and support the CW production facilities. We performed these activities in close contact with GosNIIOKhT, and as a result we have established good and long-term relations with them. Our Federal Client (MOD) has selected GosNIIOKhT and GIPROSINTEZ to be the lead organizations in the resolution of the CWD problem. In this particular case, we are discussing the Shchuch'ye facility that is to be created within the framework of the CWD Program. This slide lists the organizations who have participated and who are participating in developing the Justification of Investment for the Shchuch'ye Facility Construction. Specifically, GIPROSINTEZ is acting as the lead design organization, GosNIIOKhT is acting as the lead CWD technology developer and GPISS 31 MOD RF is acting as the engineering and social infrastructure developer. In addition to the regulatory norms governing the Justification of Investment development process and in accordance with the decision made by Kurgan Region Administration, the Urals NII "Ecology" Institute from Perm was involved in the comprehensive evaluation of Shchuch'ye Area. These four organizations have completed this effort. I will describe it later on.

I would like to present you with the procedure related to design documentation development for any type of facility and in this case for the Shchuch'ye facility. This chart outlines the procedure for the development and approval of Justification of Investment concepts. The blue-colored boxes mark the design and design documentation development stages. The red-colored box shows the detail documentation development stage. The green-colored boxes represent the facility construction stage. We are currently in the design documentation development stage. This is Stage 2 shown in the yellow box. There is still a long way to go, working together with Kurgan Region and Shchuch'ye Area specialists.

Pursuant to the contract, we proceeded with the Justification of Investment development on 15 November 1996. On 31 May 1997, the Justification of Investment development stage was completed. Beginning in April 1997, the documentation was

presented to the RF Federal and Regional Expert Review agencies. The RF Ministry of Public Health approved the Industrial Area and Waste Burial Site plans. The Industrial Area plans were also approved by the expert review agencies authorized by the RF Mining Inspection Agency and we are expecting the RF Mining Inspection Agency Conclusion shortly. The Justification of Investment Expert Review by the RF Main Fire Inspection Agency is nearing completion. On 1 June, the full set of documentation was presented to both Kurgan Region and Shchuch'ye Area Administrations. On 1 July, the documentation was submitted to the RF Main Environmental Expert Review agency.

Prior to the Justification of Investment development, a working group, including representatives from Kurgan Region and Shchuch'ye Area Administrations, Federal Client representatives and representatives from design institutes considered five possible options for the Facility Industrial Area location, through the use of maps. These options are shown on the slide. Following the analysis of all the options, together with Kurgan Region Administration and the Federal Client, two sites were selected for further consideration, Site 3 and Site 5. The Justification of Investment has been developed for both sites.

CWD facilities are a complex of utilities and infrastructure buildings, as well as public buildings. We broke this complex down in the following way: Industrial Area, Waste Burial Site, Residential Area, Barracks Area, International Inspection Area, Logistics Area, Fire Station Area, Utility Structures, Social Infrastructure Facilities and Construction Subcontractor Industrial Depot.

This slide shows the Industrial Area Layout for Site 5. The diagram deals with the Industrial Area, the Waste Burial Site and a number of structures supporting the two sites' normal operational mode. They include the boiler house, fire station, gas rescue station and cafeteria. The red-colored lines show environmental monitoring stations.

A similar layout diagram was developed for the Industrial Area Location at Site 3.

The Industrial Area General Layout Diagram. The Industrial Area general layout is based on a zoning principle. The layout diagram was divided into three zones. The first, the green-colored zone, deals with the production area; the second, the red-colored zone, is devoted to the transportation and warehouse areas as well as the power supply area. The third, or yellow-colored zone, is the Industrial Site Support Area. In accordance with the Statement of Work for the Justification of Investment development, the Industrial Area construction will include two phases.

The annual capacity of Phase 1 allows for the destruction of 500 tons of CA (chemical agents). The full-scale annual capacity of the entire facility is 1,200 tons of CA. Phase I includes Production Building No. 1 (green) with two process lines. Process Line 1 is designated for the disassembly of 85-152 mm munitions. Process Line 2 is intended for the disassembly of 220 mm munitions. Phase II provides for the construction of

Building 1A (green shading) and service Building 2A (yellow shading). Building 1A will have two process lines - Process Line 3 is designated for the disassembly of 85-152 mm munitions and Process Line 4 is designated for the disassembly of large-size munitions.

For 286 days a year, the Industrial Area will be operated continuously. Two months are provided for the Industrial Area equipment and buildings maintenance activities. The disassembly preparation area, the munitions disassembly area, and CA detoxification area of the facility will be operated continuously by personnel working in 6 shifts of 4 hours each. The remainder of the production areas will have 4 shifts, each lasting 6 hours. According to the Industrial Area operation plan, 5.5 years are required to destroy the Shchuch'ye CW inventory.

The main stages of munitions destruction include buffer storage of the munitions, disassembly preparation, disassembly, thermal treatment of the demilitarized munitions shells and detoxification of the extracted CA. Munitions will be transported from the storage facility (the Planovy settlement) to the destruction facility along the railroad being designed as part of the facility. They will be transported in metal cars, inside specially developed non-disposable metal containers. The buffer storage area will be located in Buildings 1 and 1A. The number of munitions to be delivered to the Industrial Area at one time is estimated to be sufficient for 5 days of facility operation.

The Industrial Area Technical and Economic Parameters. This slide is devoted to all of the Industrial Area's needs for both Phase I and Phase II. I would like to note that the number of personnel for the operation of Phase I of the Industrial Area is 808. The number of personnel for the full-scale operation is 1,012. The full-scale operation investment is 1,389 billion rubles in 1997 prices. The phase I construction period is 41 months and the full-scale facility construction period will require an additional 21 months.

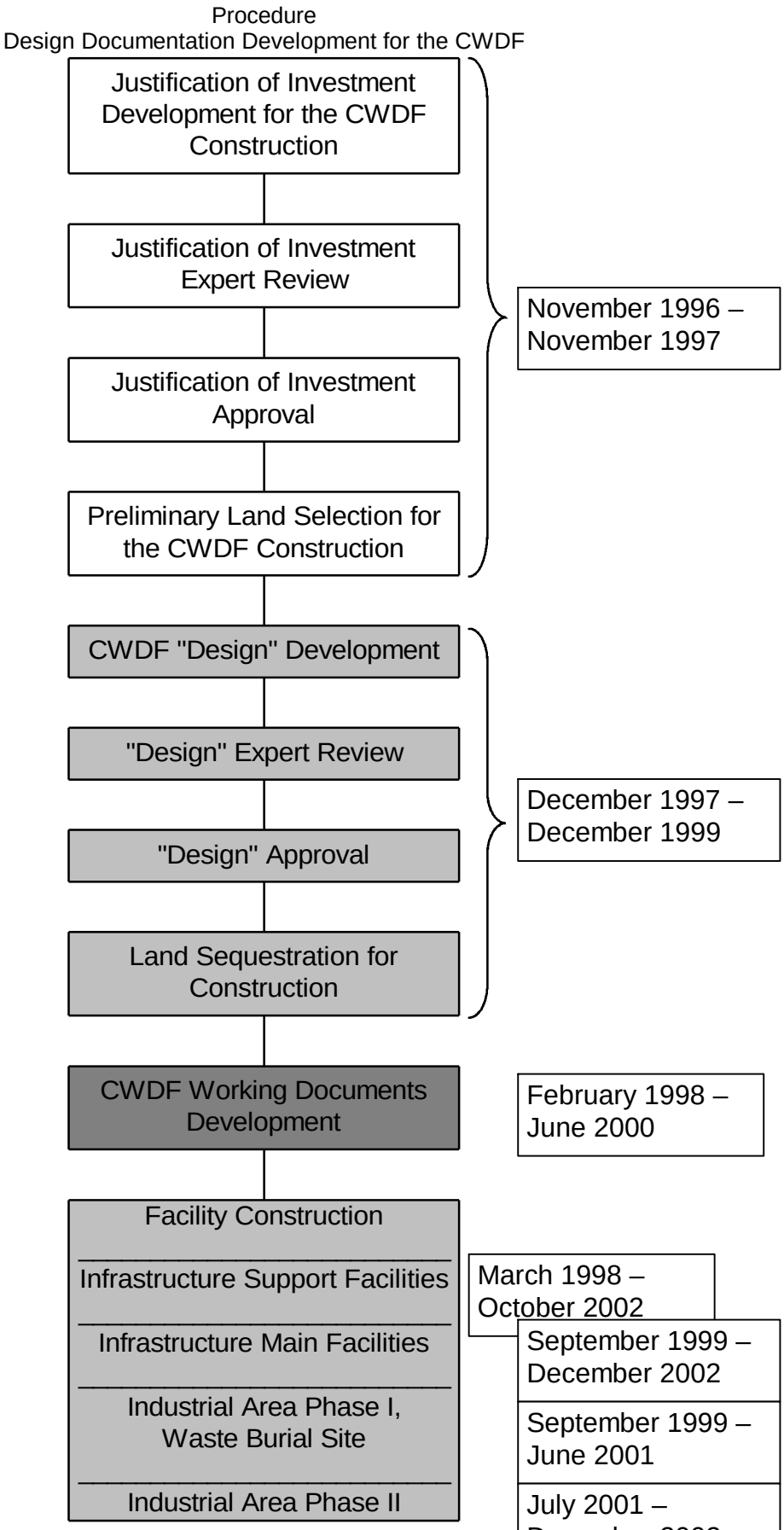
Layout Concept.

Building No. 1: I have already mentioned that Building 1 will have two lines for 85-152 mm munitions and 220 mm munitions. The blue area of this slide shows the main processing equipment. Munitions are moved along this equipment, from the moment they are fed to the process line to the area where decontaminated munitions are disposed of as scrap metal. The munitions' route is shown by arrows.

A similar layout concept was developed for Building 1A. The distinctive feature is that process line 4 is designated for large-size munitions. I would like to note that the amount of equipment directly designated for the destruction of CA amounts to only 30% of the total of equipment located in the building. The remaining equipment and funds for the building construction are designated to ensure environmental protection.

The Industrial Area waste consists of bitumen-salt masses which will be delivered to the specially designed Waste Burial Site. The design of the site will be in accordance with the design concepts of the Justification of Investment Development Stage. Dr. Petrunin spoke about this earlier. Following its preparation, the bitumen- salt mass will be barreled in metal containers and will be transported to the Waste Burial Site located in the direct proximity of the Industrial Area. Due to the fact that the evaluation of toxicological wastes has not yet been completed (it is scheduled for the next year), during the Justification of Investment stage we plan to bury waste, such as for example, bitumen-saline masses, under stricter conditions, i.e. in reinforced concrete bunkers. This concept may be reconsidered during further review when the Waste will be assigned a specific Hazard Class. The green-colored general layout diagram shows the Waste Burial Site Operations Area. At the top you can see the bunkers for burial of the bitumen saline masses in barrels. At the bottom you can see sumps for the treated waste water coming from the Industrial Area. The closed-loop water circuit concept for the Industrial Area water doesn't include the waste water sewage from the Industrial Area.

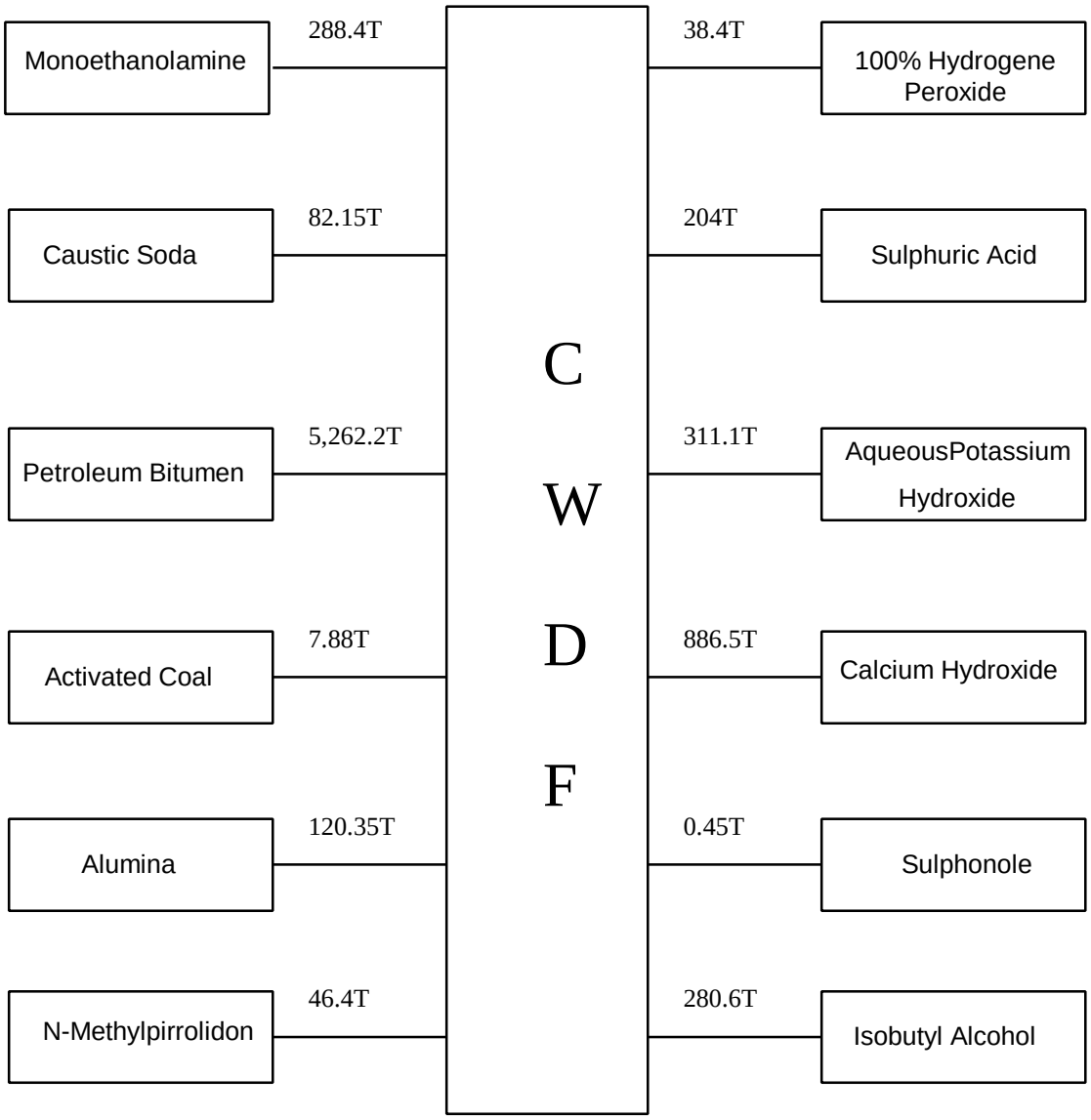
The last slide is devoted to the technical and economic parameters of the Waste Burial Site. The table shows the power resources demand for the Waste Burial Site. The number of operating personnel is 27, the investment volume is 206 billion rubles in 1997 prices, and the construction period is 25 months. (In this case, the construction period was identified as 25 months). Longer term construction depends on the wastes generated by the Industrial Area. Thus, at first we create the Burial Site capacity to correspond to 2 years of operation of the Industrial Area. After that, it will be simultaneously developed with the Industrial Area operation.


Procedure
Design Documentation Development for the CWDF
Justification of Investment Development for the CWDF Construction
Justification of Investment Expert Review
Justification of Investment Approval
Preliminary Land Selection for the CWDF Construction
November 1996 – November 1997
CWDF "Design" Development
"Design" Expert Review
"Design" Approval
Land Sequestration for Construction
December 1997 – December 1999
CWDF Working Documents Development
February 1998 – June 2000
Facility Construction
Infrastructure Support Facilities
March 1998 – October 2002
Infrastructure Main Facilities
September 1999 – December 2002
Industrial Area Phase I, Waste Burial Site
September 1999 – June 2001
Industrial Area Phase II
July 2001 – December 2002

Major Cost And Engineering Parameters
Solid Wastes Burial Site
Shchuch'ye CWDF

Description	Unit	Parameters	
		Phase I (max.)	Full-Scale (max.)
1. Fuel and Power Resources Demand			
- power supply	mln kWt-hours	37.15	53.31
- heat supply	gkal	71559.1	106059.1
- natural gas	thousand m^3	2244.1	3754.7
- process water	thousand m^3	65.2	97.1
- potable water	thousand m^3	24.9	46.0
2. Operation personnel	people	808	1012
including workers	people	577	758
3. Investments (in 1997 prices; coefficient is 6800 compared to 1991 prices)	billions of rubles	1123.7	1389.7
including construction and installation	billions of rubles	502.5	604.4
4. Construction Period Duration	months	41	21

Feedstock Supply Diagram for the Industrial Area, the Shchuch'ye CWDF



Major Cost And Engineering Parameters
Industrial Area
Shchuch'ye CWDF

Description	Unit	Parameters
		Full-Scale (max.)
1. Fuel and Power Resources Demand		
- power supply	mln kWt-hours	521.8
- heat supply	gkal	3,419.7
- process/potable water	thousand m^3	2.17
2. Operation personnel	people	27
including manual labor	people	23
3. Investments (in 1997 prices; coefficient is 6800 compared to 1991 prices)	billions of rubles	206.45
including construction and installation	billions of rubles	157.33
4. Construction Period Duration	months	25

Kuzmina, G. A., Head of the AO "Giprosintez" division, Volgograd

IMPACT OF THE CWDF ON THE STATE OF THE ENVIRONMENT

Ladies and Gentlemen, participants of the public Hearings!

We listened to Vasilyuk's report with great attention. We understand the problem pretty well. We are also anxious about the problem of the environmental situation in Shchuch'ye Area and the anticipated construction of the CWDF.

At the Justification of Investment stage, to be considered today, a preliminary evaluation of the impact on the environment is being carried out. This work is aimed at forecasting changes to the environment caused by the anticipated construction of the facility, as well as at revealing the aspects that should be additionally investigated, considered and developed when assessing the environment during the subsequent design stages. The director of the UralNII "Ecology" institute, who spoke before me, told us about the environmental conditions in the territory of Shchuch'ye Area and proposed a number of measures for the rehabilitation of this status. Taking into account the existing realities related to the construction of the facility, we sought a comprehensive solution for the environmental safety of the facility to be created and a number of environmental problems in Shchuch'ye Area.

It follows from the analyses made by the speakers, that the maximum environmental tension relates to the hydrosphere of the area during the creation and design of the CWDF. Overwhelming attention was devoted to the creation of the closed water-supply system, drainage of the industrial zone and the land for the industrial waste burial site, which will make it possible to prevent discharge of waste water from these facilities into external receptacles. The placement of any facility requires a certain withdrawal of some natural resources and is characterized by the introduction of some components to the environment. Now I shall tell you how this problem is solved in the possible placement of the CWDF.

The first to be withdrawn would be land resources: for the possible creation of the facility, a multi-optional location of the sites is proposed and the land should be allotted in the amount of 24.5 ha. The composition of the land is as follows.

Shchuch'ye Area is an agricultural province, therefore the withdrawal of arable land is of special interest. The maximum withdrawal of arable land will be effected by placing the industrial zone in section No. 5. However, this share, compared to the total volume of arable lands in the area does not exceed 1%. It will not result in a change in the structure of the land use and orientation of the area. As we see it, the forest resources are also subject to withdrawal, possibly in the amount of 3 ha, when placing the industrial zone in section No. 3. However, the creation of the sanitary protection zone will form the first vegetation strip (with a radius of 1 km around the industrial zone), where special protective forest strips will be arranged. The total tree-planting area amounts to 540 ha, which is 10 times larger than the area to be withdrawn.

Water resources are also subject to withdrawal. The facility will be provided with water directly from the Chumlyak underground aquifer. And from this we can see the complex solution for water supply problem, not only for the industrial zone, but also the town as a whole. The water-supply diagram envisages water intake in the amount of about 7,000 m^3 per day and night and the creation of new water intake wells and laying a new water pipeline. This will make it possible to satisfy not only the needs of the

facility under construction (the share of consumption of which will make up 4.6%), but also to deliver water to the town, and the existing water will be significantly increased.

The solution of the water-supply problem is connected to the problems of sanitation, since to date the town has no sewage system. With such an increase of water volume, this problem couldn't be solved. Therefore, funds should be allotted for the construction of a municipal sewage system with drainage of all the town's run-offs to the purification works. With the normative operation of the purification works, the residual quantity of the polluting ingredients would be at a level lower than the MPC of the water tanks, and it would then be discharged to the Miass river. It should be noted that for a number of ingredients, this residual quantity is tenfold lower than the existing pollution of the Miass river.

The production has its own solid waste. The basic waste is bitumen-salt mass. This is a solid insoluble substance without gas emission. All engineering solutions provided in the present Justification of Investment allow for its burial in the ground with consideration for the normative requirements acting at present. The burials are supposed to be made in reinforced concrete bunkers with insulated bottoms. On the top, provision is made for a special cover, i.e. all requirements are met, so as to prevent the external waters from getting into the burial ground and to prevent any interaction between this land and any underground and surface ground waters. Thus, this method of burial will not affect the soil and hydrosphere.

The problem of the impact on the atmosphere should be also considered. In this case it is restricted by the time limit for the operation of the industrial zone, which is supposed to be 5.5 years. Here, the impact will be both from fixed sources of pollution and mobile sources. The maximum possible entrance of ingredients into the atmosphere is supposed to happen in the fourth year of operation of the industrial zone, and will amount to 275.5 tons a year from the fixed sources and 15.3 tons a year from mobile sources. With regard to chemical agents, the emission of these ingredients will vary at a level of 2.1^{-9} tons a year.

Along with this urgent issue, there is also the problem of air pollution in Shchuch'ye. When creating the industrial zone and infrastructure in Shchuch'ye, another very interesting structure is supposed to be created - a central boiler-house for the town, capable of handling all the thermal loads for the whole town and not just those of the facility. This boiler-house will operate on the most environmentally clean fuel - natural gas. Nineteen existing boiler-houses are planned for shut down, which will make it possible to settle the problems of the whole Shchuch'ye Area, to liquidate the substances of the 1st hazard class, i.e. vanadium pentoxide, and to considerably reduce the emissions of nitrogen dioxide.

Here on the slide you can see the forecast for the change in gross emissions into the atmosphere in connection with the creation of the facility. The amount of emitted ingredients is taken according to data from the Kurgan Committee on Environmental Control. If, in 1996, the gross emission amounted to 2,254 tons, including a bit more than 3,000 tons from the fixed sources of pollution and 2,000 tons of pollution from motor transport, with the shutdown of 19 boiler-houses, the commissioning of the newly designed boiler-house and anticipated facility (in the fourth year of operation of the industrial zone), the total reduction of the gross emissions is supposed to be on the order of 2,000 tons a year, with the share of the emission from the industrial zone and its structures not exceeding 8%. As for the composition of the emissions into the atmosphere from the facility, a number of substances will probably

be emitted, 16 of which are present today in the emissions from the town, from the industrial and consumer service enterprises of Shchuch'ye and 28 of which will be new. This is a rather wide component composition, but it is caused by the fact that the placement of the industrial zone is supposed to be at a considerable distance from the town, and not only industrial sections, but also auxiliary warehouse facilities and engineering infrastructure constructions are planned. Thus, the share of these ingredients to be emitted into the Shchuch'ye atmosphere doesn't exceed 0.05% of the total gross emission in 1996.

Consequently, the creation of the facility serves not only to minimize the impact of the anticipated facility, but also to solve a number of other problems, including the construction of a municipal sewage and run-off purification system, with up to 70% of untreated run-off being liquidated rather than now polluting the soil, hydrosphere, and even the Chumlyak water deposit, as they do currently. This is the first aspect.

In connection with the dismantling of the boiler-houses now operating under non-standard conditions, the improvement of the atmospheric condition is accomplished as well. The Justification of Investment project also supposes the creation of a burial site for solid domestic waste and non-toxic industrial waste. The decontaminated waste from the infrastructure located in Shchuch'ye and all domestic waste from the town will be sent to this site, which will make it possible to prevent the creation of additional sources of anthropogenic influence.

We have spoken much about the environmental safety of the facility. This safety will be facilitated by the approaches developed in the technology, by the design approaches which ensure all engineering solutions of the Industrial Area, as well as by a number of engineering solutions developed in the Justification of Investment project. More than 60% of all emissions into the atmosphere that are supposed to be from the industrial zone will undergo gas treatment. The sections where the chemical agents may be released into the industrial premises have a special ventilation system. When air flows from clean rooms to contaminated areas and is removed from these premises referred as "contaminated", "more toxic", with required treatment. All ventilation systems and all cleaning equipment are installed with complete back-up systems.

Shkodich, P. Ye., et al, Director of Research Institute for Hygiene, Toxicology and Occupational Pathology, Volgograd

SANITARY AND TOXICOLOGICAL EVALUATION OF THE PRODUCTS OF ORGANOPHOSPHORUS CHEMICAL AGENTS (OCA) DETOXIFICATION

In accordance with the requirements of the RF Law "On the protection of the Environment", when conducting a feasibility study, and when designing, constructing and putting into operation any federal facility, requirements for environmental safety and population health protection should be ensured.

Without question, the main criteria when selecting the optimal technology for chemical weapons destruction include ensuring safe working conditions for the CWDF personnel, and the safety of both the population and the environment.

In accordance with this generally accepted concept, environmental safety is one of the basic requirements of facilities for chemical weapons destruction.

Given that the problem of chemical weapons destruction is one of the most urgent at present time, several of the country's research and design institutes and hygiene-oriented research institutions engaged in the development of technical solutions for the destruction of CW should address the issues concerning the medical and hygienic support needed at the chemical weapons destruction facilities. One such issue deals with the evaluation of both the potential and real hazards of industrial waste.

During the course of the destruction of CW, gaseous, liquid, paste-like and solid wastes are formed, all of which are potential sources of environmental pollution, since they frequently contain, in addition to the products of chemical agent (CA) destruction, residual content from the very CA itself, known as the compounds of hazard class 1.

From 1990 to 1992 work was done in the NIIHTO on the potential evaluation of the hazards of reaction masses (RM) formed in the process of CA destruction.

The investigations for evaluation of the hazards were conducted with liquid waste (reaction masses), as well as with solid waste formed in the process of polymerization or bitumization of the masses. The investigations were also conducted for evaluation of the hazards of another solid waste - spent sorbent. The toxicity of the reaction masses and their polymerization or bitumization products were evaluated in accordance with the requirements of State Standard 12.1.007-76 “Harmful substances” and “Tentative classifier of the toxic industrial waste” No. 4286-87.

When establishing the toxicity class and the hazards of the products of CA detoxification, the toxicological and chemical and physical parameters of the key components are taken into account:

- MPC (maximum permissible concentrations) of chemical substances in the soil;
- or LD_{50} (mean lethal dose when introduced to the stomach in mg/kg) with no MPC in the soil:
- content of toxic components in the total mass of waste;
- solubility of toxic substances in water;
- volatility.

With consideration for these parameters, the toxicity index (K) is calculated for each component, the key components (not more than three) are established and the aggregate toxicity index is determined for them. The hazard class of toxic waste (RM) is established by the value of the latter.

The results of experimental investigations on warm-blooded animals (determination of LD_{50} and a study of the clinical picture of CA intoxication and other toxins) were used as evaluation parameters. Biochemical or gas-chromatographic analysis was also carried out for the residual content of CA in RM.

The results of toxicological evaluation of OCA detoxification products are given in the following table.

Results of toxicological evaluation of OCA detoxification products

No.	Name of OCA	Destruction technology and hazard class			
		First stage	Hazard class	Second stage	Hazard class
1	VX	Detoxification with mixture of ethylene glycol with orthophosphoric acid Thermal method	1 3	Detoxification with potassium monoethylene-glycolate with polymerization of RM with epoxy resin Detoxification with lignin with polymerization of RM with styrene	3
2	Sarin	Thermal method	3	Detoxification with MEA with bitumization of RM	3
3	Soman	Detoxification with MEA Thermal method	1 3	Detoxification with MEA with bitumization of RM	3

The data given in the table are indicative of the fact that the two-stage technology of OCA detoxification can be recognized as acceptable from the hygienic point of view.

It is necessary to continue the investigations for toxicological and hygienic evaluation of the OCA detoxification products formed when experimental installations and facilities for the destruction of CW are put into operation. These investigations should be carried out by specialized research institutes of the Ministry of Public Health of the Russian Federation.

Fedorov, L. A., President of the “Union for Chemical Safety”

EXPERIENCE GAINED FROM COOPERATION BETWEEN ADMINISTRATION AND PUBLIC ORGANIZATIONS IN THE AREAS OF OPERATIONS DEALING WITH CHEMICAL WEAPONS

I thank the administration of the region for giving me a chance to speak here. Today, the speakers told us that we do not need confrontation; we need cooperation and social adaptation. We know that the problem under consideration is very difficult and hazardous, therefore there should be no mistakes.

I shall tell you how our “Union for Chemical Safety” has been working for the last three to four years in this direction so as to alleviate the social tension and environmental discomfort that is possible when executing this work. We are working at all levels, not only with the regional administrations, as the title of my report already reveals. I shall try to give examples.

The first direction of the work is to understand what country we are from and what we are now. At the end of May, twenty environmental activists from Kentucky, USA, visited a military chemical base in Tooele, Utah. They familiarized themselves with the process that has been practically realized there. On May 30, eighteen environmental activists from the state of Oregon did the same thing. My point is, let us see comparable realities, our reality. Present here are representatives from the Main Missile and Artillery Department and the Department of the Commander of Chemical Troops who know that I, as the President of the Union for Chemical Safety wrote six or seven letters to the Supreme Commander-in-Chief. We requested permission to visit these seven facilities; Chapayevsk is the eighth. We wanted to be sure that everything there is in order so we could tell the population that everything at the bases is all right.

Unfortunately, we have not received any answer to our letters, but our proposal remains in force. It goes without saying that I would visit all eight facilities, and M. M. Sedov, as a Shchuch'ye representative, should regularly visit the base located not far from his house.

I hope that my judgment does not seem radical to you.

Selection of the future locations for CWD facilities is a serious matter. Our president once announced publicly that RF residents should not worry, that they will be cautious in the selection of facility locations and that the representatives of public organizations will be allowed to take part in the State commission's selection of the facility locations. Keeping in mind this promise, I also addressed our Prime Minister many times, but I did not receive any answer here either, though our proposal remains in force.

We mean not only the five facilities under consideration here in Kurgan, but the remaining thirty or so ones. We must participate in the consideration of future CWD facilities. It is an important element of constructive cooperation between public organizations and representatives of all levels of power.

Now we shall speak about the CWD program. It was signed by the Prime Minister who violated an active law in our country: the law on the obligatory environmental examination of all state programs. The document signed by the Chairman of the State Committee on Ecology, Poryadin, has no judicial force, because it is not the state's environmental examination, but simply a letter written by Poryadin. Therefore, considering that the lawful rights of residents for a favorable environmental environment were violated, we, as a public organization, appealed to the Procurator General's office, requesting that Cheronomyrdin's action be disavowed, so that this program would first undergo the State environmental examination. The first time the office did not give us any answer, but in reply to the second letter informed us that the issue had been taken under consideration.

Now I will tell you about another round of attempts to find mutual assistance so as to uphold the public's interests in the course of the legal and civil violations that have become habitual. We are working with the media. All information obtained is immediately sent to the newspapers. We have seven locations for storage of chemical

weapons, seven areas, meaning that there are area newspapers that people read in the morning. I should state that despite the fact that censorship of chemical weapons issues and problems has been actually abolished, self-censorship by the local press of this topic, unfortunately, still exists. I don't know whether the editor of the Shchuch'ye newspaper "Zvezda" is present here, but that newspaper is under self-censorship. We hope that this will be corrected. It is quite understandable: we have lived for many years this way, and some caution still remains.

Now, work with the legislative bodies of power. We have worked for at least one year in the State Duma to fix the Law on CW that was adopted by the Duma, signed by the President, published in "Rossiyskaya gazeta" and thus entered into force. Everyone here will find shortcomings in this law. For example, the residents' and public organizations' right to information is not stated well. But we shall get the information, and the law will not hinder us. It also concerns the local representatives of federal bodies' right to supervise and maintain control over the situation, activity of the storage base and CWDF. I think that Ye. G. Vasilyuk will defend his rights. Unfortunately, the law does not stipulate his rights but those of Danilov-Danilyan, who is sitting in Moscow, very far from Shchuch'ye. There are many such points.

But there are two very important social points that hinder our work.

The first point concerns construction of the social infrastructure facilities at the locations of CW storage. The construction of these social facilities was envisaged at the locations of future CWD facilities. As for the locations for CW storage, nothing was mentioned about them, though should be included in the law, resolution or decree. This is the first hindrance to our work.

The second hindrance is that people residing in the protected zone of CW storage and CWD facilities should have the right to leave if they do not want to face the risk of living in the area (evacuation at the expense of the federal budget). These two points should be included in our resolution.

Last, we propose that we should be given a chance to get acquainted with CWD technologies from the beginning to the end, that is, from the initial events that started in the autumn two years ago. We haven't been included in any activities or decisions despite our letters. Now I shall tell you about my impression from the papers received in Kurgan.

The project plan specifies a capacity of 500 tons in the first destruction line which has been designed for three years' use: 500 tons in the first year, 500 tons in the second year, 500 tons in the third year and 1,200 tons in the fourth, fifth and sixth years. The same initial design document envisages the destruction of 725 tons in the second year even with a capacity of only 500 tons, and in the third year, 950 tons, that is, twice as much as the capacity. In the fourth year, the capacity is 1,200 tons, and it is planned to destroy 1,300 tons. In the fifth year, the capacity is 1,200 tons, and it is planned to destroy 1,500 tons. Why are we in such a hurry?

The six-year destruction capacity is 5,100 tons, and 5,400 tons are stored at the facility, and they are going to manage for five years. The documents didn't mention anything about rounds of ammunition, it talks only about the production line. Let's take Line No. 4 - 160 shells for four hours, one shell in one and a half minutes, and the entire mentioned process lasts for one and a half minutes. It will be a flow process line We haven't got the destruction technology for a shell, and we have the 50 gram Russian-US experiment. And we have no CWD technology on the line.

Therefore, we don't need to rush. Our third proposal concerns the semi-industrial tests of the CWD process. With favorable tests and good environmental examinations, it is necessary to consider the problem of transfer to the site, that is to Shchuch'ye and Kizner, since the speech discusses artillery shells.

Kolodkin, V.M., Director of the Institute for Research on Natural and Technogenic Catastrophes.

PRELIMINARY RISK ASSESSMENT CONNECTED TO THE STORAGE AND CHEMICAL WEAPONS DESTRUCTION IN SHCHUCH'YE AREA, KURGAN REGION

Introduction

The problem of ensuring safety is one of the main concerns related to the storage and projected destruction of CW in Kurgan Region. This problem cannot be solved without preliminary evaluation of all of the possible aspects of potential damage. In this connection, any decision with respect to chemical agent facilities (including a decision to retain the status quo) should be preceded by a preliminary evaluation of the potential hazard which may be caused by this decision.

It is reasonable to believe that the hazard level connected to the trouble-free operation of storage facilities is negligible. This is confirmed by the fact that at present there is no basis to conclude that the operation of storage facilities has influenced population health or natural environmental conditions. With respect to the storage facilities located in the area of the Udmurt Republic, this statement is based on the results of population health examinations conducted independently by several organizations (1,2) and the results of selected inspections of the natural environment (3). It should be taken into account that the storage facilities located in the area of the Udmurt Republic have been operation for several decades.

The evaluation of accident-related hazards performed within the framework of the accident risk theory, appears to be more important. Accident-related hazards arise when the facility functions under conditions not envisaged in the project - under accident conditions. The term "accident" here is understood as any unplanned, unexpected event which causes or is able to cause damage to peoples' health, the natural environment or material structures of technogenic origin (4). The causes of accidents at facilities with chemical agents may be diverse. They may be such unlikely events as a meteorite falling on the facility, or an aircraft crashing into it. They may also

be the result of intended unlawful activities (terrorist acts). Additionally, there may be a disaster of technogenic or natural origin. Such factors as a mistake made by operating personnel during scheduled maintenance cannot be completely ruled out either. In general, the accident may have a great number of characteristics and initiate a number of damaging effects. However, it may be stated for sure that as compared to other damaging effects during an accident at the storage facility, the toxic effect will be the most damaging.

The general diagram for evaluating potential accident-related hazards connected to chemical agent storage facilities is presented in Fig.1. According to this diagram, the evaluation includes: revealing the conditions in which the source of Toxic Hazard emerges and determination of source characteristics; forecasting the space and time characteristics of the abiotic environment contaminated; forecasting the accident-recurrence frequency; and calculating risk ratings as characteristics of the potential hazard level.

The first link which sets forth the degree of potential hazard is the scale of the Toxic Hazard source. This scale corresponds to the degree of toxic effect, the intensity and the activity time of the source. The toxic effect is passed from the hazard source to the risk recipient through the abiotic environment. The effect transfer process is the second link, and depends on the environment parameters and the properties of the chemical agents. And, finally, the hazard degree will be different for different risk recipients.

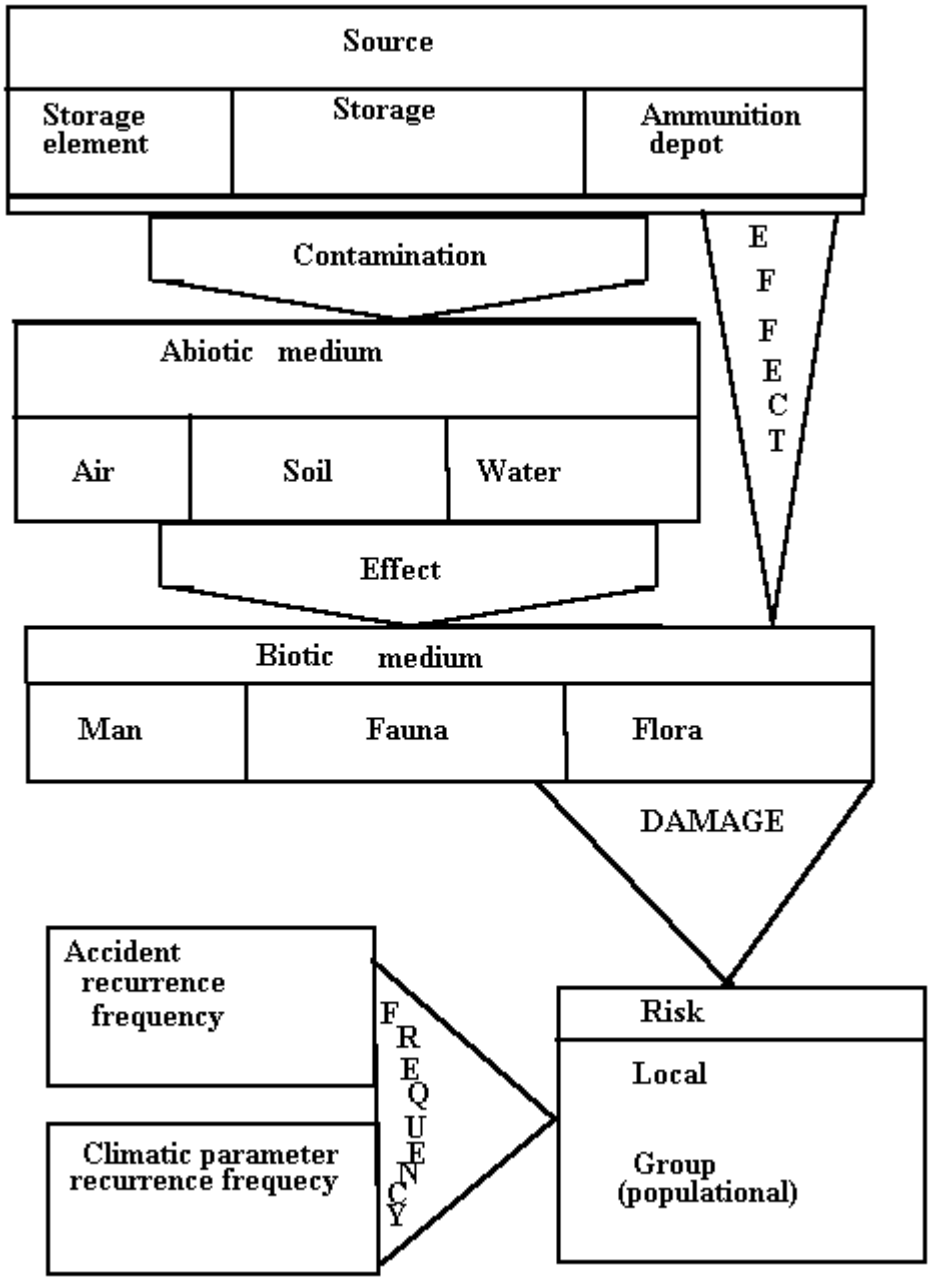


Fig.1. General Diagram for Forecasting the Potential Accident-Related Hazard Level.

The plan is to process chemical munitions at the destruction facility by lots. The maximum quantity of chemical agents in a lot, during the destruction of chemical munitions from the Shchuch'ye armory, is given in Table 1.

It is believed that the greatest hazard arises when an explosion or fire occurs at the moment when the munitions disassembly has been finished and the chemical agents begin moving into the reactor. An explosion at this moment can lift up to 50M of chemical agents (M = mass of explosives in TNT equivalent) into the air. Five percent of the total mass remains in the air in the form of an aerosol cloud. The cloud dimensions are determined by the scattering of explosion products. The rest of the compound is dissipated over the adjacent territory at a radius of about 20 m. It has been assumed that in the case of a fire at the destruction facility, all the agents present in the technological process are ignited, but during combustion about 20% of the chemical agents are thrown, together with the air flow, to a height of about 50 m, and remain unburned.

Table 1.
Characteristics of Toxic Hazard Sources During the Destruction of Chemical Munitions From the Shchuch'ye Armory

Situation	Chemical agent type	Mass, kg	Liquid area, sq.m.
Leakage from munitions on process area floor	Sarin Soman V-gas	 20 550	 10 130
Leakage of reaction mixture on detoxification reactor tray	Sarin Soman V-gas	 20 550	 10 10
Leakage from munitions on disassembly rig tray	Sarin, Soman, V-gas	20 550	10 12
Leakage from munitions during transportation	Sarin Soman V-gas	 20 550	 10 130

Some ratings of the potential accident-related hazard level are given in Table 2. The characteristics correspond to the Kambarka, Kizner and the Shchuch'ye armories which are used for the storage of chemical agents. The factors used when forecasting the hazard level connected to the destruction (processing) facility for chemical agents stored in the Shchuch'ye armory are as follows: the supposed construction site is located at a distance of 11 km to the North of the storage facility; and the delivery method is a road laid at a distance of 2 km from populated localities. At the time of the accident at the destruction facility there are 100 people.

Table 2
Evaluation Ratings of Accident-Related Hazard Connected with Chemical Agent Storage and Destruction Facilities

Facility	R_G (25), persons	P^{let}(25)	S^{let}(R>0.01), km	N_{let}, persons
Kambarka	10^{-3}	10^{-3}	< 1	< 10
Kizner	10^{-2}	10^{-3}	5	700
Shchuch'ye (storage)	10^{-1}	10^{-3}	5	3000
Shchuch'ye (destruction)	10^{-2}	10^{-4}	2	300

Table 2 uses the following symbols: R_G (25) - integral value of group risk for 25 years (storage facility operation period is assumed to be 25 years); P^{let} (25) - probability of lethal outcome for at least one person in 25 years; S^{let} (R> 0.01) - area of damage zone corresponding to the local risk level R>0.01; N_{let} - maximum number of lethal outcomes in the most unfavorable weather conditions, the frequency of which is not less than 0.1.

The R_G values were determined on the basis of evaluations of typical accident situation frequencies: 10^{-4} - for storage facilities; 2.5×10^{-3} - for destruction facilities

The values of meteorological factors used to estimate the maximum damaging effect were the following: wind speed - 8 m/sec.; atmospheric condition - does not matter, air temperature - 20° C; wind direction - towards the nearest largely populated locality (Kambarka, Kizner, Shchuch'ye).

CONCLUSION

The question we are trying to answer is: Which is more hazardous - storage or destruction of chemical agents? The answer is closely connected to the probable accident situations and their consequences considered above. At first glance, the reply is evident: If up to the present time there have been practically no cases of leakage from chemical munitions or damages to tanks with chemical agents, whereas any work with chemical agents will inevitably promote the probability of accidents, then storage is safer. However, the preliminary calculations show that the level of chemical hazard during storage of chemical agents in tanks increases with time. This is connected to the physical and chemical processes which occur both with the chemical agents inside the tanks and with the materials of the tanks themselves. These processes cannot be stopped or essentially retarded. That is why delaying the beginning of the destruction process leads to the growth of the potential hazard level.

Besides, it must be remembered that at this initial stage of destruction facility operation it is necessary to consider two potentially hazardous facilities. As a matter of fact, certain operations are still being performed on both facilities which increase the

probability of an accident situation. As a result, the risk level is also increased. However, as the chemical agents are destroyed, the risk level is reduced.

The forecast of accident consequences (5, 6), expressed in accident risk ratings, determines the work strategy needed to ensure population safety and natural environment protection in the areas where chemical agents are stored and destroyed.

The forecast results should be used as a base for the following steps:

- comparative analysis of the importance of chemical agents storage facilities with the degree of potential hazard for people and environmental conditions. Differentiation of the Area with storage facilities by degree of potential hazard.
- determination of zones requiring protective measures at facilities with chemical agents.
- providing information support to ensure safety at facilities dealing with chemical agents, in particular:
  - developing software to facilitate decision-making in emergency situations, and preparing plans of action for emergency situations;
  - developing software to organize map exercises for ministries and departments to follow in emergency situations;
- Informing and instructing population residing in storage areas with an aim towards reducing the level of social tension.

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Zhdanov, V.A., Chief of the Department of Radiation, Chemical, and Biological Protection

CHARACTERISTICS OF CHEMICAL AGENTS STORED IN THE PLANOVY STORAGE FACILITY IN SHCHUCH'YE AREA OF KURGAN REGION

Chemical munitions stored at the "Planovy" settlement armory, in Shchuch'ye Area, are filled with Sarin, Soman, VX, and phosgene. Sarin, Soman, and VX belong to the group of nerve chemical agents, whereas phosgene belongs to the group of suffocating chemical agents. Their chemical and structural formulas as well as their chemical names are shown on the slide. Sarin, Soman, and VX belong to the class of organophosphorus chemical agents which are derived from methylphosphine acid. Phosgene is a derivative of carbonic acid.

Basic physical properties of organophosphorus chemical agents (OP chemical agents) and phosgene are listed on slide 2. According to their combined condition, Sarin, Soman, and VX are liquids. Their density is somewhat higher than that of water. These chemical agents have relatively high boiling points and relatively low freezing points.

Among OP chemical agents, Sarin features the highest volatility and is capable of forming hazardous vaporous concentrations at any time of the year. VX is a low volatile agent as compared to Sarin. VX volatility is comparable with that of mineral oils. Soman is in the middle in terms of volatility between Sarin and VX. Sarin is easily dissolved in water unlike Soman and VX. The OP chemical agents are well dissolved in organic solvents, such as dichloroethane, chlorobenzene, carbon tetrachloride, etc. The same goes for fuels: kerosene, gasoline, diesel fuel, and lubricating oils. The OP chemical agents are quickly destroyed by solutions of alkaline and ammonium in chloramines, so they can be used as decontaminating solutions.

Surfaces of structures and clothing contaminated with OP chemical agents require mandatory decontamination. Food products contaminated with OP agents are inedible and should be destroyed. Water should be decontaminated via special filters. Due to their capability of easy absorption in different materials, such as paint, wood, concrete, brick, human skin, clothing, and food products, the organophosphorus agents can create conditions not only for direct/indirect, but also primary, and secondary contamination of the human organism via three passages: the respiratory tract, skin, and the digestive tract. Soman and VX penetrate the respiratory tract in the form of aerosols and have a toxic effect 5-10 times higher than Sarin. Among these chemical agents, the greatest toxic effect on the human organism due to penetration through skin is produced by the VX in the drop-liquid phase.

Poisoning by the OP chemical agents is very quick. There is no dormant period. The first signs of contamination are as follows: eye sight is blurred due to the narrowing of the pupils. There are also meiotic reactions, heavy breathing, feeling of heaviness in the chest, and retrosternal pain. These symptoms are accompanied with terrible headaches and can last for 2-3 days. More serious poisoning causes meiosis, suffocation, excessive salivation, and sweating. It may also result in a feeling of fear, vomiting, diarrhea, bouts of convulsion which may continue for several hours, and finally loss of consciousness. Death results from respiratory and cardiac arrest.

First aid to patients injured by OP chemical agents depends on how the agent penetrated the organism. In case of agent penetration through the respiratory tract, it is necessary to put a gas mask on the injured person. The injured person must received an intramuscle injection of antidote by means of a special syringe; they also need to be evacuated from the contaminated area. In case of breathing irregularities, it is recommended to give the person oxygen and continue assisted breathing.

If the OP agent is found on the patient's skin, the contaminated areas of skin should be immediately processed with a special solution. If the OP agents penetrate the organism through the digestive tract, measures should be taken to induce vomiting, and whenever possible, give the person a 1%-solution of edible soda or clean water.

The means of individual protection from OP chemical agents include a gas mask and special clothing made of rubberized fabric. Evidently, you are familiar with protective suits of different designs.

In contrast to the OP agents, phosgene in normal conditions is a colorless gas which is 3.5 times heavier than air. It smells like earthy hay or decayed apples. Phosgene turns liquid at a temperature of +8°C. It becomes a solid at -118°C. It is slightly soluble in water and gets slowly decomposed by vapor present in the air. Caustic alkalines, water solutions of soda, and ammonia spirit destroy phosgene to form harmless substances. Phosgene does not contaminate water. Food products which were in contact with phosgene become edible after thermal treatment or airing the food until the smell disappears. Phosgene mainly affects the human respiratory tract, harming the lungs. Its action results in edema of the lungs which leads to a sudden interruption of oxygen.

The first signs of phosgene contamination are as follows: sweet taste in the mouth, coughing, dizziness, general weakness. After the person is evacuated from the contaminated area, these symptoms disappear within 4-6 hours. Even if it takes up to 12 hours, they will feel well. This period is the dormant period of phosgene during which the lung's are harmed. Upon expiration of the dormant period, the condition of the person radically worsens. It is characterized by shallow breathing, coughing, diarrhea, headaches, and fevers of 38-39°C. The cheeks, lips, and nose turn blue. The specific feature of phosgene contamination is that this chemical agent, even in low concentrations but during a long period, causes serious injury. Assisted breathing for phosgene-contaminated patients is not allowed. Protection from phosgene is provided by a gas mask.

The presence of OP agents and phosgene in the different media, air, water, soil, as well as in samples taken from various objects - surfaces, plants, food products, fodder - is determined by special technical and chemical means.

The technical means of measuring include instruments fitted with special indicator tubes and gas-warning devices. The operational principle of these instruments is based on manual or automatic pumping of contaminated air through indicator tubes and determining if chemical agents are present by seeing if the filler changes color. Indicator tubes are glass cylinders sealed from both ends which encase filler or ampoules with chemical reagents.

Gas-warning devices are continuous-acting automatic instruments working as a follow-up. Their operational principle is based on the photo-parametric method of determining the presence of chemical agents in the air. Gas-warning devices differ from indicator tubes by the fact that the process of chemical agent detection occurs on the ribbon soaked with indicating reagents; the air to be checked is automatically passed

through this ribbon. The changes of ribbon color are automatically recorded by photo-elements and photo-resistors. Upon detection of chemical agents, the gas-warning instrument produces sound and light signals. Chemical laboratories use chemical and physical-chemical methods of indication of chemical substances in different samples.

The laboratory is provided with corresponding instruments, sets, chemical glassware, and reagents which ensure sampling and analysis of the contaminated samples.

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REVIEW OF RUSSIAN CWD TECHNOLOGIES

Since the opinion often exists that residents of regions where the building of a chemical weapons destruction facility is planned, often face the fact that politicians and the military do whatever they want, I would like to assure all of you that in recent years, since the signing of the Convention about CW Destruction (CWD), the process in Russia has truly been developing in a democratic and public manner, and not nearly as bad as could have been expected.

I shall start by showing you some pictures from the magazine of the Russian Chemical Society. In 1995, Messrs. Petrov, Kholstov, Zavyalova and their colleagues published the methodology for evaluation of CWD technologies. I cannot list these prerequisites, which are written here, but you can find them in volume 39, pages 42-45, 1995.

The next figure shows the conclusion of these basic criteria and, more importantly, the methodology evaluation structure. Here, I'll explain briefly how technologies are being presented for comparison, how technologies are grouped by level of development, and their differentiation by critical requirements. The review of technologies for the purposes of comparison, evaluation, and calculation of specific functions using a point system, use this very methodology which was shown in the first figure and in this figure. Technologies are compared by evaluation results, the best technology is chosen and, finally, a decision is made. I would like to note that from 1994 to 1995 the expert commissions included, as far as I remember, 40-45 specialists, chemists, technologists, toxicologists, doctors, and ecologists, and the discussions were very heated.

I'll say a few words about organophosphorus compounds. Here are the results that led to the choice of the lewisite destruction technology, which was critical for Saratov and Udmurt Republic. This subject has been described in detail in Messrs Maximov and Petrov's articles. Mr. Maximov was the expert commission chairman, and you will see the references to the materials from the First Hearings published by the Russian Green Cross and also to the Russian Chemical Magazine. Here, you see that the alkaline hydrolysis technology, with further electrolysis of reaction mass, is the winner (first place, 252.6 points). In second place is the ammonolysis technology (218.3 points), in third, the alcoholysis technology (192,7 points) and in fourth, hydrolysis technology (the last of the technologies chosen for competition).

Unfortunately, I don't have time to dwell on the advantages and disadvantages, so right now I'll move on to the choosing of the CWD technology. A federal comparison was done in 1995. You see that out of the three technologies under consideration, one was a two-stage technology which was discussed in detail, another a single-stage technology which attracted less attention, and a third one, which was a thermal technology. You can see that one of the criteria (it is the first cited here) where the technology needed to prove effective with chemical agents, is met in all three cases. The conversion degree was an important criterion too, and you see that for the first stage of the two-stage method for Sarin it was only -99,999976, for Soman - 99,9999976 and V-gas - 99,999952. For the singe-stage technology - the degree was 99,99 and for the thermal - 99,9999. Temperature is also an important criterion - for the first stage of the two-stage method it was -99-1100°C, and for the second stage - 140-2000°C, for the single-stage method - conventional and for the thermal technology - 1100°C. In all three cases the pressure was atmospheric.

Creating a reserve of chemical agents, so as to ensure continuous operation of the reactor, is unnecessary in one of the technologies. The possibility of converting the chemical agents into combat CAs is impossible in both the two-stage and single-stage technologies. Somehow, there is this possibility in the thermal technology. The hazard class of destruction products, which was partially discussed today, for two-stage technology is the 4th; for single-stage and thermal technologies, the 3rd. The presence of a system for the destruction of shells exists with the two-stage technology, but not with the single-stage technology, and with the thermal technology the shells are destroyed in the technological process.

The point-total was differentiated from one side by the rating for the two-stage technology - 61, for the single-stage - 25 and for the thermal technology -57. The point-total, according to the questionnaire, for the two-stage technology is 75.76, for the single-stage technology, 48.75 and for the thermal technology, 54.29. The overall point-totals are: 136.76 (1st place) - two-stage technology; 121.29 (2nd place) - thermal technology, and 75.75 (3rd place) - single-stage technology.

As for the chemistry involved in the two-stage process, much was said today in the report, so I'll not discuss it in detail. I'll only note that detoxification of Sarin and similarly Soman and VX can be performed by means of monoethanolamine as it is described in the work of our colleagues from GosNIIOKhT. Here you see certain equations which provide not only for detoxification, in this case by means of MEA, but it also appears possible to ensure interaction between separating hydrogen fluoride and MEA, formation of such a MEA and interaction of this MEA monohydrate with Sarin molecule. This work shows that other types of interaction do not occur and that is why the mathematical modeling which was carried out is very effective and took into account only these four types of interactions. As for detoxification of the nerve gas VX, work was done regarding the possible investigation of its detoxification using phosphoric acid ethylene glycol.

There is some water here, because it is water-based phosphoric acid in those seven equations which were cited here. I shall not speak about chemistry in detail. You see the equations, they are all given here. The last phrase is probably the most important. The investigation of reaction processes, by mathematical modeling, showed that the required degree of detoxification of the VX gas can be reached both in periodical and in continuos versions of the process.

Today, I would also like to mention the technology which provides for detoxification of OP agents by natural binding detoxicants such as legpin. And I want to inform you that in the physical organic chemistry laboratory of Moscow University, headed by me, we are developing a method for binding toxic substances with natural humus substances. Here, there are certain details of the method. I refer to the work of Aleksandrova, Kopanev and Lugansky and their colleagues which was published in two issues of the Russian Chemical Magazine in 1994-95. The most important detail of this method lies in the fact that detoxification products are obtained in solid and loose forms, with the process being performed in two stages. The first stage is a detoxification process itself, which produces low-toxic reaction masses and the second stage is the utilization and processing of reaction masses into products either fit for use or for burial. One of the methods is bitumenization which was already discussed today. The second method is the possibility of producing a legnin-styrene polymer which is a thermoplastic and can be used for the production of tar for toxic wastes to be buried, but the process requires, of course, more detailed consideration to make it technologically feasible.

And, finally, I want to show you the last exhibit. This is the work of our colleagues from Kirov, who have developed an approach connected to the destruction of OP agents by the "complex power effect" method. This approach is still far from perfection, far from practical use, but in my opinion the approach is interesting because it allows the use of rather cheap reagents, although power consumption here may be high. As you see, the mixture of OP agents with electrolytes is supplied into the space between the pipes of the detoxification unit. The mixture is treated with powerful ultra-sound waves and a high-current electrical field which are applied according to an assigned algorithm so as to ensure destruction of chemical agents and to form some acceptable products. One of the important advantages of this method is that there are no elements of organic substances in the detoxification products, and this allows us to hope that the process will be environmentally safe. According to the statement made by the authors, detoxification of Soman is 99.9%, but this is not enough for its use from a technological viewpoint. However, the authors affirm that in future they can ensure complete detoxification of these substances. There are many other advantages, but I cannot discuss them because of time limitations.

In conclusion, I want to say once more that residents of regions where chemical weapons stores are located are absolutely justified when they express their concern that the proposed technologies may turn out to be environmentally unsafe, but I assure you that environmental and professional organizations exist for this purpose. There are also environmental public organizations and the local residents must participate in the work of these organizations, so as to make their voices heard in defense of the natural environment, in defense of their own health and the health of generations to come.

Demidyuk, V.V., GosNIIOKhT Lead Scientist

FOREIGN CHEMICAL WEAPONS DESTRUCTION TECHNOLOGIES OVERVIEW

Ladies and Gentlemen, Colleagues:

The development of alternative chemical weapons destruction technologies reflects the intensive search of both Russian and foreign scientists for the safest and most effective resolution to this complicated task. There have been many proposals made as to how to deal with finding a solution for the CW destruction problem. At the same time, it is obvious that not all the proposals were thought over carefully, theoretically developed, nor were they proved by practical experiments using either the actual agents or simulant agents. The majority of the authors have only an inkling about the requirements set for the chemical agent activities and about the entire safety system for such a complex facility like the CW Destruction Facility.

The most intriguing proposals seem to be the ones that include several all-purpose methods for the destruction of all types of chemical agents. They include traditional methods used by all countries in the past: landfill, ocean dumping, and open-air incineration. However, time has proven that such common (rudimentary) methods are not in accordance with the environmental standards set and may even lead to hazardous consequences. Currently, such methods don't comply with both international and national laws, including Russian laws.

The ban set by the Geneva Convention on dumping and open-air incineration methods to destroy chemical weapons naturally led to the development of industrial incineration technology.

At the same time, I must note that the incineration methodologies were well developed and are widely used not only for the destruction of chemically hazardous substances, but also for the destruction of domestic waste products. It is quite possible that this very factor served as a basis for choosing the direct incineration technology for the destruction of chemical agents in Germany, Canada, the US, and Great Britain.

However, back in the '60s, the US initiated the study of other so-called alternative technologies aimed at chemical weapons destruction.

In 1979, at the Tooele military base in the US, a chemical agent incineration unit was tested and brought into operation.

In 1980, a chemical agent destruction unit was also brought into operation in Munster, Germany. The German unit was more extensively used as it allows incinerating all stockpile chemical agents as well as miscellaneous contaminated materials.

I would like to quote one fascinating statement made by German specialists of the "Lurgi" Company that developed the incineration process:

“None of the chemical facilities in Western Europe will undertake the responsibility for chemical weapons destruction because the risk of being accused of causing an accident is very high.” These specialists believe that “the environmental safety problem during chemical agent destruction operations requires intensive study and new technical developments.”

The US has the most experience in reviewing alternative technology proposals. Evaluations and reviews of various chemical weapons destruction technologies were conducted in 1969, 1984, and 1988. It resulted in selecting the incineration method as the baseline chemical weapons destruction technology.

In the course of testing the chemical weapons destruction facility at the Johnston Atoll, the population’s concern increased with regard to the safety of the incineration process. A number of opponents claimed that the incineration technology involved too high a risk to the health of the population living adjacently to the storage sites, and such risk could be avoided only by using alternative technologies.

Due to the population’s elevated concern, the US Army and the US National Research Council reached an agreement to review the alternative technologies issue once again.

The latest alternative technology review in the US was held in 1993.

Based on modern requirements, chemical weapons destruction technology shall include basic and auxiliary processes and operations, equipment, and organizational-type activities aimed at completing the entire task of destruction, i.e., support chemical munitions’ disassembly operations, chemical agent neutralization (detoxification) process, decontamination of munitions shells, destruction of reaction masses, munitions shells and miscellaneous gaseous, liquid, and solid waste processing. Based on the above-mentioned requirements, it is clear that only some of the proposed chemical agent destruction methods could be tested as actual destruction technologies. Therefore, the conclusion made by the US National Research Council is very interesting: “None of the proposed alternative methods offered any changes for the preparatory operations dealing with the munitions disassembly, for the explosive agent and metal parts thermal treatment process, or any other processes used in the previously developed baseline technology.” Based on the above information, we can conclude that the alternative technologies proposed for review both in the US and in Russia can’t be called “technologies” at all. In fact, they can only be classified as chemical agent destruction methods under different developmental stages beginning with theoretical proposals and leading to the design and development of various activities.

The US National Academy of Sciences classified all the proposed alternative technologies combining the destruction processes into several groups:

<u>Low-temperature Liquid Phase Processes, including:</u>

- detoxification by chemical processes;
- recovery methods;

- detoxification using activating radiation;
- oxidation processes at low temperature and under low pressure:
- *chemical oxidation;*
- *electrochemical oxidation;*
- *oxidation and ultraviolet irradiation;*
- biological processes:
- *direct decomposition;*
- *decomposition of the VX chemical treatment products;*
- chemical hydrolysis and mustard gas biological decomposition;
- biological decontamination of explosive substances and power elements.

Medium- and High-Temperature Processes, including:

- processes at medium temperature and under high pressure:
- *oxidation using moist air;*
- *super critical water oxidation;*
- pyrolysis at high temperature and under low pressure:
- *pyrolysis in molten metal;*
- *plasma arc processes;*
- *gasification processes;*
- Synthetica Company suggested detoxification process;
- oxidation process at high temperature and low pressure:
- *catalytic oxidation in pseudo fluidized bed;*
- *molten salt oxidation;*
- *catalytic oxidation;*
- other processes:
- *hydrogenation processes.*

Other alternative technologies, including:

- low temperature liquid phase detoxification process under low pressure;
- liquid phase oxidation at low temperature and under low pressure;
- medium temperature and high pressure oxidation;
- high temperature oxidation under low pressure.

The National Research Council reviewed all the technologies submitted by the National Academy of Sciences and stated that all the issues related to the so-called alternative technologies in general didn't deal with the technologies at all, but they were devoted only to the chemical agent destruction process.

In addition, the National Research Council believes that any decrease of the destruction risk by using alternative technologies will be significantly prevailed by the cumulative risk resulting from the long-term chemical agent storage period.

As a result of the review and analysis of alternative technologies, the National Research Council submitted 24 (twenty-four) recommendations to the US Army.

We presume that four alternative process options recommended for further research and development are the most significant ones:

- neutralization followed by incineration at the site or at other locations;
- neutralization followed by oxidation in the moist air and further biological treatment;
- neutralization followed by super critical water oxidation; and
- neutralization followed by biological treatment.

Consequently, in 1994 the National Research Council recommended to conduct studies for four alternative chemical agent destruction technologies based on the NEUTRALIZATION process.

The National Research Council believes that the neutralization-based technologies are the most suitable ones to develop a real alternative to the baseline technology.

The US DoD's Assistant to the Secretary of Defense on Biological and Chemical Defense Problems, Mr. Theodore Prosive, stated that "since 1994, the US has been actively conducting research, design, and developmental activities on two technologies based on low temperature and low pressure (chemical neutralization and chemical neutralization followed by bio decomposition of the neutralized agent). Currently, we are studying these technologies from the prospective of their usage at smaller sites. We are also studying other potential alternative technologies, including electrochemical oxidation by silver II and catalytic extraction process. In 1997, the DoD is to define an alternative technology, if there is any, for testing."

I took this quotation from the magazine CW and their Destruction, No. 1, 1996, page 7.

In 1995, the US Army issued an information-type document titled: "Report on Review and Newest Data on the Alternative Destruction Technologies."

This report provided some specific data on the study progress of the following CA destruction technologies:

- chemical neutralization;
- chemical oxidation;
- electrochemical oxidation;
- oxidation by oxidizing agents and ultraviolet irradiation;
- bio-decomposition;
- moist air oxidation;
- super critical water oxidation;
- in molten metal;
- in electrical arc plasma;
- gasification processes;
- detoxification by synthesis;
- catalytic fluid oxidation;
- oxidation in molten salts;
- catalytic oxidation;

- hydrogenation process;
- chemical reaction using sulfur.

The report didn't include any conclusions regarding the advantages of using any of these methods over another.

In 1996, the National Research Council issued a new document reviewing the progress of various methods as possible alternatives to the baseline incineration technology. The report reaffirmed previously defined requirements to the alternative methods and criteria. Like in the previous document (issued in 1995), none of the technologies was selected.

A brief overview of the status of alternative technologies developed abroad shows us their variety and different stages of their development.

In conclusion, I would like to quote an ancient proverb: "You reap what you sow." In other words, "You get what you put into it." Therefore, no matter what destruction technology is selected (except for dumping and open-air incineration methods), we have to resolve the most difficult problems, i.e. how to collect (trap) all the wastes and what to do with them in the future.

Varfolomeyev, S.D., Moscow State University

POSSIBLE WAYS OF UPGRADING CWD TECHNOLOGY - BIODEGRADATION

The destruction of chemical-weapon stockpiles is a very complicated problem and requires the development of unique, single-purpose technologies. Any proposed technology based on chemical, catalytic, or biological methods of chemical agent decomposition should meet a number of strict requirements:

- complete and guaranteed safety;
- absence of risk connected with transportation, disassembly, and preparation of components of the CW destruction process;
- absence of contact of the resultant components or products and their decontamination with the surrounding environment;
- high degree of reliability in all stages of the technological process;
- low level of economic cost involved.

Currently, there is a firmly established conception that the CW destruction technology should include two micro stages: 1) neutralization (detoxification) of active components; 2) utilization of neutralization products. Each physical, chemical, and biological method, which can be used for this purpose, has certain advantages and shortcomings. Conditionally, two-stage methods of chemical-agent conversion can be divided into the following groups:

1) purely chemical methods (chem - chem);
2) combined methods (chem-bio);

3) purely bio-technical methods (bio-bio).

Evaluation of technologies which have been developed up to now, on the basis of physical and chemical methods, shows that their realization is connected with the formation of large quantities of solid, liquid, and gaseous waste materials which will become a considerable encumbrance for the environment. The bio-technological method seems to be more preferable as compared with other methods due to the absence of secondary waste materials, high degree of chemical-agent degradation, and the possibility of complete assimilation of agent decomposition products, resulting in the environmental cleanliness of the process.

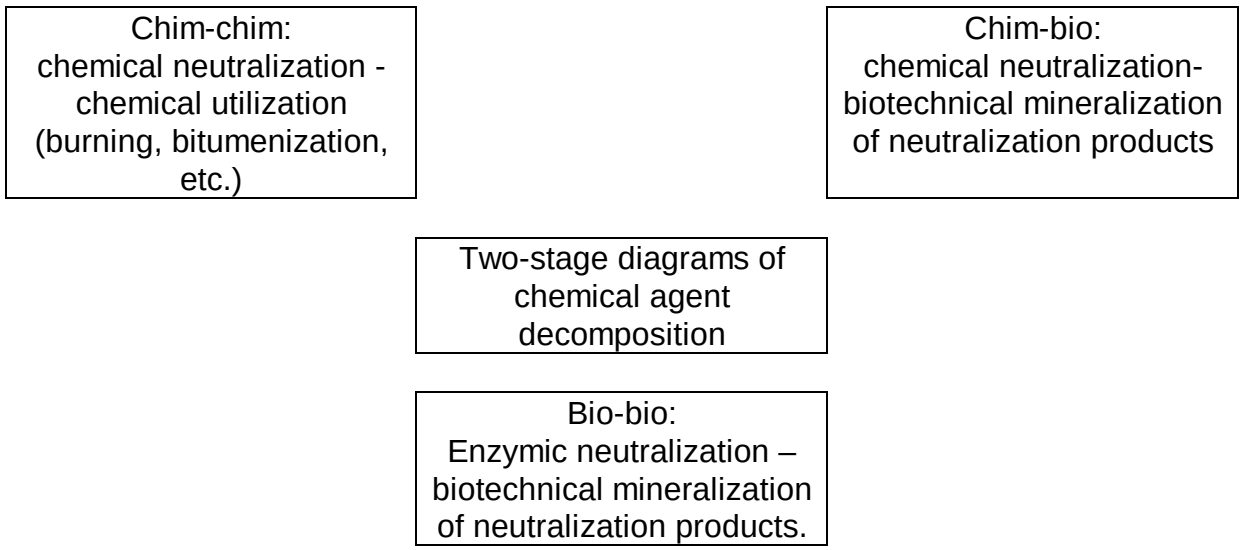

Fig 1.

A new approach has been developed for destroying chemical weapons at storage facilities that does not allow mechanical displacement of containers. The new approach offered for discussion provides for the creation of a complex technology including the following basic stages:

- bio disassembly on the basis of bio-corrosion or accelerated chemical corrosion;
- enzymic neutralization of neurotoxins by means of bacterial organophosphatehydrolases;
- complete microbiological conversion of organic components into the mixture of methane and carbon dioxide.
- precipitation and structuring of non-organic products.

A more detailed description of the complex technology stages is necessary.

BIODISASSEMBLY BASED ON BIO-CORROSION AND ACCELERATED CHEMICAL CORROSION PROCESSES

Metal containers with chemical agents can be destroyed after they're emptied by using a biological corrosion process caused by lithotrophic microorganisms. Corrosive activity of lithotroph bacteria with respect to metal is especially notable in conditions of underground medium where thione- and sulfate-reducing bacteria of sulfur are the most effective agents of microbe corrosion. Activities of these two groups of bacteria are strictly limited by environmental conditions and, first of all, by the content of oxygen in

the medium. Depending on aeration, the corrosion may be aerobic or anaerobic and is caused by a corresponding group of bacteria.

It is possible to create favorable conditions for developing corrosive groups of bacteria by means of several technological methods which result in sudden changes of the environmental situation. Corrosion activity of sulfur-cycle bacteria during underground construction in Paleogene deposits can be taken as an example of such a technogenic effect. The typical peculiarity of the given deposits is the pyritization of sediment, presence of sulfur, iron, and carbonate compounds. Thione- and sulfate-reducing bacteria are also widely spread in them.

Thione bacteria not only create highly corrosive media but also directly participate in corrosion. The influence of acidophilic and acidophobic thione bacteria on metal corrosion and their role in accelerating electrode processes have been proven. The close contact of bacterial cells with corroding metal is possible due to the capability of thione bacteria to adhere to the metal surface. At the first stage of bio-corrosion on munitions shells, it is natural to expect aerobic conditions, so the leading role in metal destruction will be played by thione acidophilic bacteria T. ferrooxidants and T. thiooxidants. However, due to continuous consumption of oxygen by thione bacteria in the bio-corrosion processes and as a result of terminating forced aeration caused by loading the biomass into the vessels for biotechnological detoxification of chemical agents, the bio-corrosion effectiveness is expected to decrease. In new (anaerobic) conditions T. Thioparus bacteria, representing the families of Desulfovibrio and Desulfotomaculum, will act more effectively.

The corrosion and bio-corrosion process may be essentially accelerated under the influence of a number of chemical factors. In particular, it is possible to employ the reactions of iron chemical transformation and activation. We have demonstrated the accelerated corrosion on the samples of steel of which the chemical ammunition is made.

$$Fe + CuSO_4 — Cu^o + FeSO_4$$

The metal base of the ammunition can be completely destroyed within a week. The excessive copper ions can be “neutralized” by precipitation of Sodium sulfide.

ENZYMATIC NEUTRALIZATION OF ORGANOPHOSPHORUS CA

The key process in the complex biodegradation technology of chemical weapons is the process of detoxification of substances having nerve effects. These belong to alkylphosphinic acid derivatives.

In recent years, the cooperation of US and Russian laboratories allowed us to study the ferments capable to perform effective hydrolysis of bond (P-F, P-O, P-S) - phosphotriesterases and organophosphathydraulases (OPH). The OPH have been fully described and cloned. Most effective for the detoxification of chemical agents are cobalt-dependent forms of OPH.

The advantages of enzymatic detoxification processes are as follows:

1) The hydrolytic process can be carried out at neutral, low-acid, or low-alkaline values of pH, water being the only nucleophil involved in the reaction.

2) the rates of enzymatic reactions are rather high; this feature allows to obtain high rates of conversion within limited periods of time.

3) Ferments are compatible with any biological systems and that is why the enzymatic detoxification of territories, facilities, personnel, waste water, and wastes of

the chemical agent destruction technology is environmentally safe. This property of the enzymatic neutralization allows us to consider it as an important component of any environmentally clean technology for detoxification of nerve poisons.

From the viewpoint of using the organophosphathydrolase in the systems of neutralization or detoxification of chemical-weapon active components, the most important are the following characteristics of the enzymatic reaction:

- Ferment possesses wide specific properties and is capable of catalyzing the hydrolysis of Sarin, Soman, VX-gases and a number of pesticides. For OPH catalytic reactions, the high values of K_{cat} were documented.

- Ferment activity is displayed at central values of pH, the value of $pK_a = 7.0$, $pK_b = 9.5$.

- In the reaction of hydrolysis under the influence of OPH, the inhibiting effects by the substrate or the products of hydrolysis were not recorded. This means that processes at high concentrations of chemical agents are possible.

- OPH was transferred into E. coli and a high level of protein expression was recorded.

- Possibilities of creating different catalytic forms were demonstrated.

The hydrolysis process can be performed under the effect of a ferment in non-destroyed cells under the influence of an immobilized ferment or immobilized cells.

The importance of using OPH in detoxification processes of OP chemical agents within the complex technology is that evaluation of the possibility of using the ferment and its compounds in real technological conditions, in particular at high concentrations of chemical agents, high ionic powers of solutions, high concentrations of fluorine ions, high concentrations of phosphates and derivatives of phosphorous acid, exists.

The possibility of effective interaction of OPH with 0.77M solutions was shown. Complete hydrolysis (up to non-detectable level - less than 6 ppm) proceeded for 1 hour at 25°C and at a pH of 7.0 It was also proven that the ferment can be used in an isolated form, in cells of immobilized microorganisms, and in immobilized cells.

The experiments for studying the OPH in solutions with high ionic power (up to 1.25 M) and a high concentration of fluorine (up to 1.76 M) indicated that any notable drop in the rate of hydrolysis of paraoxon substrates in solutions with an ionic power of about 1M is not observed. In the presence of high concentrations of fluoride-ion, the hydrolysis is not even activated.

So, the data available in technical literature and a number of performed experiments allow to us successfully predict the use of OPH in biotechnological detoxification of OP chemical agents. The enzymatic neutralization of OP agents should be followed by complete microbiological conversion of organic components into the mixture of methane and carbon dioxide.

BIODEGRADATION OF ORGANIC PARTS OF CHEMICAL AGENTS INTO MIXTURES OF METHANE AND CARBON DIOXIDE

Under the effect of the anaerobic consortium of microorganisms, the methanogenic process turns into a powerful anaerobic process for the degradation of organic compounds. At the present time, this process has been thoroughly experimentally and theoretically studied. The preliminary experiments showed the principal possibility of biotransformation of diethers of phosphorous acid under the effect of microorganism association suspension operation in the medium of granulated slime taken from the UASB-reactor laboratory working on the synthetic medium.

The basic chemical reaction can be presented in the following form:

$$4\ CH_3\ PO(OH)OCH(CH_3)_2 + 10H_2\ O = 13\ CH_4 + 4\ H_3\ PO_4\ 3\ CO_2$$

Anaerobic decomposition of organic compounds under the effect of methanogenic microorganisms proceeds at pH 4-10, temperature 5-60°C and, depending on the intensity the process, can last from several days to several months.

The given stage of chemical agent bioneutralization process makes the CW destruction process irreversible.

SETTLING AND STRUCTURING OF NON-ORGANIC COMPONENTS

Non-organic mixtures in the form of sulfides, metal hydroxides, soluble fluorides, and phosphates will be the products of enzymatic neutralization and anaerobic conversion of organic components of chemical agents.

For complete conservation of the system, it seems logical to use the process of settling the fluorides and phosphates with calcium hydroxide..

The products of this reaction are maximum-strength calcium-phosphate-fluoride sediments, the composition of which is close to bone tissue and tooth enamel.

Settling and structuring of non-organics is the last stage of the complex biotechnology of weapon disassembly on the basis of bio-corrosion followed by enzymatic neutralization of organophosphorus chemical agents and complete conversion into gaseous and mineralized products

Kevin Flamm, Project Manager, Cooperative Threat Reduction Program

UNITED STATES CWD PROGRAM

Good afternoon, ladies and gentlemen!

In 1985, the DoD received directions from Congress to destroy the CW inventory; in 1994, Congress expanded the directions to include all means of chemical warfare.

One of the program's main objectives is to reduce the risk to the population using three methods. First of all, CW destruction leads to a reduced public health risk. Second, all technology being used at each CW storage facility was created taking into account the CW stockpiles at each individual facility.

In addition, at each location we work with the public to increase response capabilities in case of an accident and to improve emergency preparedness at all locations. This map shows the US CW storage facilities. We possess eight CW storage facilities, plus one facility at Johnston Atoll. Our CW inventory constitutes more than 30,000 tons of weapons filled with GB, GD and mustard gas. It also includes containers, mines, bombs, cases and artillery projectiles. All types of CW, except for bombs and rocket projectiles, are filled with explosives. Following its development, each technology was safely used at the storage sites. Although DoD personnel conduct these activities, they

have to report to state organizations and establishments. If an organization finds that the facility is not safely operated, it has the right to stop the facility operation.

At present, we have two sites: Johnston Atoll and Tooele, where incineration technology is utilized to destroy CW. Kurgan region representatives had the opportunity to visit the Tooele facility in April. Currently, the construction of two additional facilities is underway. The first facility will be located in Umatilla, Oregon; the second in Anniston, Alabama. At the same time, we are in the process of evaluating the two alternative technologies described by Mr. Demidyuk. Our plan is to create one pilot facility in Edgewood, Maryland, to evaluate the mustard gas destruction process, and to create another in Indiana to use neutralization techniques for VX destruction. The Kentucky facility operation was stopped pending the development and review of other alternative technologies. The purpose of the development of alternative technologies is to give the public an opportunity to review other technologies besides incineration technology. The National Scientific Academy has performed tests revealing that baseline incineration technology is the most effective destruction method for mixed munitions types. The Academy recommended an evaluation of the neutralization method at the bulk agent storage facilities. Following a number of tests, two technologies for creating pilot facilities were evaluated. The facility in Maryland will mix hot water with mustard gas and the reaction mass will be bio-recovered. The facility in Indiana will implement a neutralization of the VX using alkaline as well as reaction mass mineralization with a supercritical water oxidation reactor.

One of the most important aspects of our program is the public outreach effort being conducted in the USA. The main objective is to establish a mutual relationship among various public organizations, mass media, as well as federal organizations and the public. We feel it is necessary to continue our efforts in improving our relations. We have established information offices at the seven CW storage sites, shown here, and we opened the seventh office in Maryland last month. This office is similar to the one in Utah that the Kurgan representatives had a chance to visit. Documentation on all technologies, mockups of different CW destruction facilities as well as videotapes describing all technologies under review are presented in these offices. We did the utmost to inform the public on the CWD technology, including financing the "Residents' Advisory Committee" program. Advisory committees have been established at all the CW stockpiling areas. The committees include two USG representatives and seven local representatives. All the committee members are appointed by the local governor. The committees provide a formal interactive connection between the public and USG representatives. A USG representative and several members of these committees have arrived here. Two are Mr. Gary Griffith and Mr. Dave Ostler, both Utah representatives. Ours is a first-generation facility. The Johnston Atoll facility started its operation in 1990 and managed to destroy safely two-thirds of all the area’s CW stockpiled inventory. All of the 155 mm artillery projectiles and 150 mm rockets have been destroyed. The goal is to destroy the entire CW inventory at Johnston Atoll by the year 2000. Another first-generation facility is located in Tooele, Utah. Facility construction was completed in 1993, and operation began last August. For three years, we worked with non-agent filled munitions in order to test all the operations. All tests for federal agencies and the Environmental Protection Agency were successfully completed, and all destruction operations will be finished by 2003. As for the second-generation facilities, contracts

have already been issued for Anniston and Umatilla, and construction at both sites is already underway. The last second-generation facility is located in Pine Bluff. Contract negotiations are on-going but near completion, and I hope that by September of 1997 the contract will have been issued. In conclusion, I would like to say that the USA undertook commitments to safely and speedily destroy its CW inventories in their stockpiling areas by 2004. Each facility will use the most suitable technology. We have established mutual relations with the local public. We realize that in the long run the public is the basic regulating body at all site location areas.

Baryshnikov, V.V., Director of AO "Kurgankhimmash"

CAPABILITIES OF "KURGANKHIMMASH" FOR THE PRODUCTION AND DELIVERY OF NON-STANDARD EQUIPMENT FOR THE CWDF

OAO "Kurgankhimmash" offers its services as a manufacturer of process line equipment for the chemical weapons destruction facility in Shchuch'ye in Kurgan Region. It also offers to store and destroy other chemical weapons as needed.

The "Kurgankhimmash" open joint-stock company was founded 40 years ago as the Kurgan Chemical Machine-Building Plant, and it has been the largest boiler-equipment manufacturer for different types of industries.

OAO "Kurgankhimmash" operates under the auspices of the Gosgortekhnadzor of Russia and specializes in the manufacture of pressure and vacuum equipment for exploding hazardous, toxic, and highly-corrosive media.

OAO "Kurgankhimmash" has retained the production facilities and DKV and ADDK equipment for manufacturing earlier produced items for degassification and decontamination that meet the standards set by the Ministry of Defense.

Within one month, the plant manufactured and delivered the equipment for the removal of the Chernobyl Nuclear Power Plant catastrophe. Technological capabilities of the plant allow the equipment to be manufactured with diameters of up to 3000 mm, capacity up to 200 m^3 and with the weight of the parts up to 30 tons.

The right to manufacture this equipment is confirmed by licenses issued by the Gosgortekhnadzor of Russia.

In addition, OAO "Kurgankhimmash" has a license for projecting the "Kotlonadzor" facilities at 3.0 mPa.

OAO "Kurgankhimmash" has a good design department which can prepare drawings and technical documentation for any non-standard equipment on the basis of the customer's technical specifications, sketches, and projects within short periods of time. Non-standard equipment is manufactured within 3 months after receiving the technical assignment. The plant has a licensed laboratory for checking the quality of welded seams and testing 100% of these welded seams by non-destruction methods (by ultrasound and X-ray equipment). Welding of the manufactured equipment is performed only by welders who have the appropriate certificates issued by the Gosgortekhnadzor of Russia.

The plant also has a laboratory for checking the chemical composition and mechanical properties of metal supplied to the plant and for checking the mechanical and metallographic properties of welded joints.

OAO “Kurgankhimmash” has a press shop permitting the production of spherical and elliptic bottoms, up to 3000 mm in diameter inclusive of any metal and rolling the tank shell with a diameter up to 3000 mm and a thickness up to 25 mm.

There is an experimental shop in the plant for the manufacture of prototypes of new equipment as well as a testing laboratory that has been awarded the Russian “Gosstandart” certificate for technical competence. This laboratory is intended for the testing of new equipment.

Basic materials used in the manufacture of equipment are: carbon steel, low-alloy steel, alloy steel, high-alloy steel, double-layer steel, and titanium.

The plant also produces equipment with chemically-resistant inner coatings made of rubber, ebonite, and semi-ebonite. The plant uses a new technology for making inner rubberized coatings intended for operation with sudden drops of temperature and at sub-zero temperatures (to - 40°C).

The plant has modern welding equipment which allows the performance of semi-automatic and automatic welding under the layer of flux and in the medium of protective gases as well as for the welding of different types of steel together.

Production nomenclature of OAO “Kurgankhimmash” is as follows:

- air cleaning and drying units including air coolers, water-and-oil separators, screen filters, air collectors, air distribution fittings, oil filters, refrigerator machines, and automatic units for filtration and desiccation of compressed gases which are not worse than class 1 as stated by GOST 17433-80 and have a dew point of up to -60°C.;

- heat-exchange equipment for heating, cooling, condensation and evaporation of liquid, steam, gas, and their mixtures;

- chambers for vulcanization, impregnation of items with special compounds and for construction needs, for different processes of vulcanization with rubber mixtures, soaking of items with special compositions, for thermo-moist treatment of lime bricks and small construction blocks of cellular concrete in the medium of saturated steam, coating of aluminum castings with liquid glass for use under pressure and in vacuum;

- pendulum, three-column centrifuges intended for centrifugal separation of suspensions with medium- and small-size phase as well as for removal of liquid from yarn and fiber with a separation factor of up to 2600;

- ozonizing equipment intended for cleaning drains and potable water as well as for other branches of industry where the technological process requires a strong oxidizer not producing any harmful side products;

- technological tanks for chemical industry;

- technological tanks for petroleum and gas production, including oil and gas separators and equipment for liquid and gaseous hydrocarbon media according to specification TU-26-18-35-89;

- gas tanks and cylinders for storage, transportation and dispensing of exploding hazardous and toxic liquefied gases including tanks for storage and transportation of liquid chlorine, equipment for storage, and evacuation of defective tanks with chlorine including the equipment for neutralizing the remaining chlorine;

- tanks and associated equipment for special application manufactured individually in conformity with the customer’s technical specifications and projects.

In addition, OAO “Kurgankhimmash” produces many types of non-standard equipment including metal structures by main production shops, non-standard production shops, and mechanical repair shops.

The listed equipment has been produced by the “Kurgankhimmash” plant for 40 years and is being used in all chemical enterprises of the CIS and other foreign countries.

1. Welded tanks for chemical enterprises including:

- GEE, VEE, VKE, GKK, VKP, and VPP type welded tanks, in horizontal and vertical options with a capacity from 0.25 to 100 m^3 for use with NG, TG, GV, Gzh media as stated in GOST 12.1.004-76 (1,2,3, and 4 hazard class), working temperature from -60°C to +300°C and pressure of up to 2.5 mPa with internal and external special devices;

- vertical steel welded tanks with stirring devices according to the catalogue of the LenNIIKhimmash intended for various technological processes that use liquid single-phase and multi-phase media with a dynamic viscosity not more than 50 poises, density of up to 2000 kg/ m^2 with different working media: highly-corrosive, flammable, explosive, hazardous, or toxic fluid, emulsion, gas-liquid mixture, or suspension, with the tank capacity from 0.25 to 50 m^3, working pressure of up to 2.5 mPa, with a drive power of up to 40 kW. Tanks can be furnished with external jackets or internal pipe coils. The working temperature is from -60°C to +250°C.

This equipment is made of carbon, low-alloy, alloy, high-alloy steels, and also uses chemically-resistant rubberized inner coats.

The listed equipment has been produced by the “Kurgankhimmash” plant for 30 years and is being used at all chemical enterprises of the CIS and other foreign countries.

2. Ozonizing equipment for cleaning waste water from chemical enterprises, including complete lines consisting of: air compressor, air cleaning and sectioning units, ozone generators, units for treating waste water with ozone, and units for decomposition of the remaining ozone, ozone-sorption cleaning of drainage and gas emissions containing cyanides, phenols, strontium, mercury, arsenic oxides and other elements and compounds of the 1st hazard class, which are difficult to separate. The flow rate of ozonizing lines may be different depending on the type of ozonizers used. The lines are fitted with high-capacity, reliable, high-frequency ozonizers with low power consumption.

Effectiveness of ozone-sorption cleaning of contaminated waste water and gas emissions has been confirmed in the process of operation ozonizing equipment in the town of Zagorsk (production of special fuel), Novocheboksarsk (production of agricultural poisons and chemicals), Dzerzhinsk (production of ethyl liquids) and in special production processes of industrial enterprises in other towns.

3. Heat-exchanger equipment: jacket-and-pipe heat-exchangers, refrigerators, condensers, and evaporators with fixed and floating pipe grates and expansion bends on the jacket in horizontal and vertical options, singe, and multiple type TN, TK and KhK with the external diameter of up to 800mm, pressure of up to 2.5 Mpa., temperature up to +350°C; they are made of carbon or stainless steel.

4. Special tanks are manufactured in accordance with the customer’s technical specifications and technical projects.

The plant is capable of producing any equipment for filling and pressure within the limits of 3000 mm in diameter, weight of separate parts up to 30 tons, and operating

temperature of 350°C. The equipment can be made with any internal or external devices. Construction materials: carbon and stainless steels and with chemically-resistant rubberized coating.

After selection of the CW destruction technology by the State Research Institute of Organic Chemistry and Technology (GosNIIOKhT) and development of the project for construction of a chemical agent disposal shop by the GIPROKHLOR or the GIPROSINTEZ, it would be possible for OAO "Kurgankhimmash" to begin work. It can make working drawings of the required equipment in accordance with the technical projects. It can manufacture, test, and perform starting and adjustment work after the equipment's construction.

In order to fulfill customers' orders, the "Kurgankhimmash" plant is ready, together with related organizations, to make arrangements for quality inspection of the equipment by the customer after its manufacture.

The equipment shall be produced in conformity with Russian standards of series ISO-9000.

"Kurgankhimmash's" participation in building this facility will essentially reduce the construction costs because expenses for transporting the equipment will be minimal, and it will be easy to arrange quick communication during its construction for any necessary adjustments.

The "Kurgankhimmash" has a special fulfillment department for beginning and adjusting work as well as for servicing the delivered equipment to ensure its reliable and effective operation.

Sidorov, V.A., Head of Administration of Shchuch'ye Area, Kurgan Region

PROPOSALS OF SHCHUCH'YE AREA ADMINISTRATION FOR CONSTRUCTION OF CWD FACILITIES

Ladies and gentlemen, dear friends!

Dear Shchuch'ye residents!

US state and business representatives, the International and Russian Green Cross, RF representatives from the Ministry of Defense, deputies of the State Duma, the Regional legislative assembly, local authorities, regional administration, leading Russian project institutes, public organizations, journalists and all those who showed interest in the resolution of Shchuch'ye Area problems: on behalf of the Administration of Shchuch'ye Area and 30,000 residents, allow me to greet you and thank all of you for participating in the Third Hearings on CWD problems in Shchuch'ye Area.

Our area for the first time in its history has attracted international and public attention. This is fitting because we all have a common problem that must be solved because nothing is worse than unsolved problems. We have been called upon to find reasonable and balanced approaches, with a great responsibility for the people.

I am sure that the Hearings concerning Shchuch'ye will be responsible and constructive so that later we can call them successful.

The activities of our administration have been closely connected with the problem of CW storage and destruction. In November 1996, we effectively worked through the initial investment stage; later, we worked to obtain approvals, amendments, and an exchange of opinions. In June, during consideration of funding the investment project, we made a rather realistic and timely evaluation of the project. As a result of this work, we not only proposed the amendments to the basic project, that were agreed to, but also achieved approval for funding.

We took an active part in Ministry of Defense meetings, visited the leading institutes of the country, met the political leaders, scientists, state officials, and journalists, visited CW storage and destruction sites and had many consultations.

With Administration assistance, the Union for Chemical Safety organization was set up; now the Green Cross organization is being established. The area administration newspaper Zvezda began actively seeking information. In addition, we organized meetings and conferences, sanctioned the issue of the newspaper "Our Voice" and prepared a special issue of Zvezda.

Finally, we created the necessary conditions for everyone who wanted to participate in solving the problem of CW storage and destruction.

Today, nobody can accuse us of being inactive and unprincipled.

I think that our main achievement is that we brought attention to the problems of the area, of which today's Hearings are additional proof.

We tried to make reasonable and balanced decisions. The main goal was the safety of people who live in the future CW storage and destruction area.

This reasoning and balance is linked with the current social and economic situation in the area. If the area economy fails to stabilize, the list of social problems will be very long. Social workers do not receive their wages until January 1, 1997. The debt totals 4 billion rubles. I thank doctors, teachers, artists, administrative personnel at all levels for their civic duty and patriotism. Grants for children, in the amount of 2 billion rubles, have not been received. We have to admit that we cannot feed our children, some of whom show signs of dystrophy. Realizing the situation, the area administration has taken urgent measures to organize a children's health camp in three shifts.

Health care personnel have received only 30% of funding for six months operation, a substantial decrease compared with budget allocations for the year, and there is nothing we can do about it.

Preparing the town for winter and repairing water lines in Shchuch'ye are causing serious difficulties and great concern. The CW storage facility is also supplied with

water from these pipelines. The cost of repair is 1 billion rubles. There is no money and no hope for getting it.

The resolution of basic social problems is closely linked with the participation of Federal and regional bodies:

1) These bodies are the legislative base at all levels for ensuring social guarantees, compensations, determination of the storage and destruction zones and special status of these zones;

2) Funding of water pipeline renovation with participation of Ministry of Defense. The money the local enterprises pays as federal taxes should stay in the Area. This is very important.

It is necessary to stop the attempts by the Defense Ministry and other departments concerning railways and petroleum pipeline management to pass the social infrastructure facilities to local administration to avoid operational expenses. It is also essential to ensure quality living conditions for the law enforcement and medical personnel. United by a common problem we must work together for this goal.

I clearly understand that social-economic stabilization of the area depends primarily on the unity of Shchuch'ye residents in improving economic activities, abiding laws and giving priority to the feeling of civic duty and to the denial of political games, maneuvers and ill will.

I am certain that the area needs assistance, because alleviation of social tension is one of the main roads to CWD.

The current amount of assistance should be increased and expanded. Because of the Green Cross, thirty children will get medical treatment in the Vladimir region, we are able to hold these Hearings, and the Information Center is being established. The social security fund helped to finance the rest of the children in Kudepsta and open a third shift in the health camp; the RF Ministry of Defense finances our representatives' business trips to meetings, conferences and CW storage facilities.

But this help is still not enough. US assistance is understood by the majority of the residents of our area to be unselfish and aimed at destruction of evil and the establishment peace on earth.

All of us are united by a common problem: CWD. Recently the deputies of the local representative assemblies expressed their opinion on this problem: they consider construction of the CWDF possible. This is a reasonable decision, expressing the will of the majority. The opinion of the local administration is that the weapons should be destroyed. Their storage is more hazardous than their destruction. Their transportation is even more hazardous. Construction of the facility is imperative. Our children and grandchildren should not have to inherit this armory. We need to move forward. The time for talking is over.

Basic concerns and problems:

1) It is necessary to perform engineering and geological diagnostics, the fulfillment contracts of which should be signed in the near future. It will allow us to choose an appropriate site for the destruction facility.

2) This work should be followed by the establishment of technical conditions for further production, not at the investment level but ready for practical construction.

3) The project should have the participation of our representatives and consideration of our opinions.

4) Pursuit of funds for the CWDF construction and the renovation of a new settlement, social infrastructure for Shchuch'ye and populated localities near the weapon storage, processing and transportation zone.

5). The main criterion for the practical organization of construction is time and public safety.

I am absolutely sure that there are wise people here who have the power and influence in the area population and are capable of understanding the importance of this problem for Shchuch'ye Area which should be solved as a matter of national importance.

Perevertin, V.N., Commander, Military Unit 92746

SAFETY SUPPORT AT THE STORAGE FACILITY IN SHCHUCH'YE, KURGAN REGION, FOR STOCKPILING AGENT-FILLED CHEMICAL MUNITIONS DURING THEIR STORAGE AND PREPARATION FOR DESTRUCTION

General Issues

On 17 September 1941, the USSR national Defense Committee issued a Resolution establishing Military Storage Facility No. 621 in Shchuch'ye, Kurgan Region. On 19 May 1945, this facility was renamed the Central Military Storage Facility No. 621. On 6 May 1947, the Central Military Storage Facility was renamed the Central Artillery Munitions Storage Facility No. 151. And finally, on 1 April 1987, the Central Artillery Munitions Storage Facility was renamed the Second Category Storage Facility.

The Storage Facility is designated to meet the following objectives:

- ensure the safe storage of chemical weapons, support continuous preparedness of the emergency crew, support means to remedy effects of any possible accidents,

ensure the provision of security and defense of the facility, and support international inspection activities.

The staffing structure of the storage facility allows for the tasks listed above to be carried out. This structure includes the following:

The management, basic sections, support sections and auxiliary sections.

The management includes the commanding officers, the planning department, the technical control department, and the auditing and financial departments.

The basic departments include the assembly and repair shop, specialized workshops, and the engineering and storage areas.

The support sections include a medical unit, the logistics department, the cafeteria, the transportation department, the communication switchboard, the construction and installation department and the security personnel department.

The storage facility under the Chief Missile and Artillery Directorate, Ministry of Defense, is specifically tasked with stockpiling the Army's chemical munitions.

The storage facility under the Chief Missile and Artillery Directorate, Ministry of Defense stockpiles chemical artillery munitions: chemical missile warheads with diameters of 85, 122, 130, 140, 152 and 220 mm, filled with:

- GB;
- GD;
- VX
- Phosgene.

The storage facility also stockpiles 8F44G1, 9N118G, 9N123G and 9N123G2-1 type missile chemical warheads.

The storage volume totals:

- 8802 railway cars containing conventional and rocket artillery munitions;
- 580 railway cars containing missile warheads.

The quantity of chemical agents totals 5.462 thousand tons.

The only explosives contained in the chemical munitions, missile warheads and rocket warheads are found in cluster-munitions dispensers.

Chemical munitions are stockpiled in accordance with the current guiding documents of the RF Ministry of Defense.

Chemical munitions are stockpiled on a separate secured technical area of 253 ha, in the following types of ground storage buildings:

- 8 reinforced concrete panel buildings;
- 8 reinforced concrete block buildings;
- 36 brick buildings;
- 14 wooden buildings.

All storage buildings have lightning rods and fire-fighting equipment. The technical area has the fire alarm system and is supplied with the required water storage reservoir for fire-fighting.

In addition to the chemical munitions storage buildings, the technical area has the following special structures designated to conduct routine maintenance activities involving chemical munitions and support the safe operation of the storage facility:

- routine SOP operations area for rocket warheads;
- decontamination substances warehouse;
- sanitary and flush station;
- leaking munitions destruction site;
- individual protective gear warehouse;
- loading/unloading sites.

Conventional artillery and rocket artillery chemical munitions are placed on wooden racks, allowing access to the munitions for technical control operations.

Missile warheads are stockpiled in storage buildings inside dust- and moisture-proof regulation issue containers.

The following activities are performed at the storage facility under the Chief Missile and Artillery Directorate, Ministry of Defense:

- technical examinations of the conventional and rocket artillery chemical munitions;
- routine operations and examinations of missile warheads;
- handling operations and transportation within the storage facility technical boundary;
- leaking munitions destruction.

The documentation covering processes and occupational safety was adopted for all of the types of activities that are carried out.

Technical Condition of Chemical Munitions

The technical condition of chemical munitions is evaluated annually based on the results technical examinations, routine operations and analysis of the agent composition.

The structure containing conventional and rocket-assisted artillery munitions ensures their safe and secure storage for a long period of time. Following are the time-frames that can be accommodated:

- GB - 40 years;
- GD - 18 years;
- VX - 25 years;
- Phosgene - 50 years.

The results of technical examinations have indicated that all conventional and rocket artillery munitions are fit for combat use and long-term storage.

The results of various studies conducted by industrial facilities have shown that the chemical munitions agent composition has not thus far posed a hazard to the munitions' shell material, a factor which provides for their safe long-term storage.

During the entire storage period of chemical munitions at the storage facility under the Chief Missile and Artillery Directorate, Ministry of Defense, about 10 leaking conventional artillery GB-filled munitions have been destroyed.

CW Safe Storage Support

The following routine activities take place aimed at supporting long-term shelf life and safe handling of chemical munitions:

- equipment-aided and visual checks of the seal of the stockpiled munitions once every two days (involving the storage building management and using VPKhR chemical agent detector;
- inspections within the security boundary, three times a day, by the guard commander, using the VPKhR chemical agent detector;
- by the unit duty officer, using the VPKhR chemical agent detector;
- all storage buildings have sealed containers for draining leaking munitions;
- personnel are provided with individual protection gear for chemical munitions operations;
- all chemical munitions operations are conducted in strict conformance with the process requirements;
- regular medical check-ups for personnel conducting chemical munitions operations;
- protection, detection, and decontamination means have been stocked up; all storage facility personnel and the entire residential quarters are provided with individual protection gear.

The fire-fighting division is brought to full strength and fully equipped (28 staff members, 3 fire-fighting vehicles and 1 GPM-54 type fire-fighting tank). In addition, the following measures were adopted to help with decontamination operations:

- adjunct emergency crews (17 people and 5 vehicles), trained in accordance with a special program, to perform operations involving leaking munitions;

- component items of regular munitions, containing explosives and powders, have been removed from the storage facility;
- the lifetime of munitions is determined within the framework of a research project conducted by the industrial facilities (TRAINER-G code design and development project);
- inventory and accounting of all individual chemical munitions.

The activities listed above ensure safe storage conditions for chemical munitions at the storage facility under the Chief Missile and Artillery Directorate, Ministry of Defense.

In case of an accident, a plan developed and approved by all the concerned agencies will be implemented to remedy the situation.

As provided for in this plan, and depending on the size of an accident related to a break in a chemical munitions' seal, additional emergency forces and means will be involved.

If a small amount of chemical munitions becomes unsealed, and if the contaminated area is within the storage area, the remedial activities will be carried out by the storage facility personnel and equipment, including:

- personnel - 100 people;
- vehicles - 46 vehicles.

If a considerable amount of chemical munitions becomes unsealed, creating a widely spread contamination source over a large area, additional forces from the Urals Military District are involved, including:

- personnel - 1500 people;
- vehicles - 500 vehicles.

The storage facility management, within the framework of combat training, conducts command post exercises on a regular basis that involve attached personnel and equipment, and headquarters exercises to simulate the implementation of this plan.

We consider it prudent to implement the following measures to improve the CW storage system:

1. Equip the storage buildings with continuous monitoring systems that use spectrograph and data processing station (developed by the Russian Academy of Sciences) to monitor chemical munitions condition. Replace the VPKhR-65 type instrument with semiautomatic detectors with a higher chemical agent vapor detection threshold (as low as to $5x10^{-9}$ mg/l).

2. Provide personnel with self-contained climate-controlled skin protection gear (because of the high physical strain of the chemical munitions operations).

3. Only stockpile chemical munitions in reinforced concrete buildings.

4. Equip all the chemical munitions storage buildings with burglar alarm systems.

5. Equip all existing wooden storage buildings with the automatic foam fire extinguishers developed by the Russian Fire Safety Scientific and Research Institute of the Ministry of Internal Affairs.

6. Equip storage buildings with mobile ventilation systems. Equip repair shops and routine operation shops with stationary ventilation systems.

7. Install automatic monitoring systems to monitor fire safety and chemical conditions in the technical area.

8. Add large terrain area decontamination teams as organic units to the Arsenal complement

9. Additionally supply the storage facility with 9YA241 type (50 each) and 9YA242 type (700 each) containers for leaking munitions

10. Develop standard reaction mass storage tanks for installation at the storage facility (for use following decontamination operations), with accommodations for subsequent transportation of the filled tanks to the chemical weapons destruction facilities.

11. Develop, for installation at the storage facility, a multi-purpose leaking munitions container for placement and subsequent destruction of leaking chemical munitions within the container.

12. Develop automated complexes for the preparation of decontamination solutions.

13. Treat the storage buildings' inner walls with the decontaminating fire-protective solution developed by GosNIIOKhT research institute.

14. Develop, for installation in the storage facility, the process equipment necessary to mechanize operations for loading chemical munitions from the storage building into motor vehicles, and for placing them in specially sealed transport containers.

15. Develop and install a modern accident outcome forecast system at the storage facility.

About 8-10 billion rubles would be required in 1997-1998 to perform these activities.

Fedorov, L.A., President of the "Union For Chemical Safety"

ONCE AGAIN - TO THE ISSUE OF CWD SAFETY

Thank you, Vladimir Afanasievich, for giving me the floor. I'll try to explain briefly our understanding of the problem.

First, there is money. The Justification of Investments should correspond to the real situation on the military chemical base. The document which Vladimir Afanasievich considers good in terms of investments and the nomenclature of items listed just now by the chief of the base are different. This should be kept in mind and that is why speaking as though this financial document were a perfect one seems to me premature.

The technology for the destruction of CW which are actually stored on the base doesn't yet exist.

For some types of ammunition there is no form of destruction technology, and for the basic types of ammunition we can speak of methods, approaches and attempts at destruction technology, but complete, proven technology does not exist.

Ecology. From the viewpoint of environmental capacity, Shchuch'ye is considered environmentally full, meaning that any force applied to the environmental condition of the area will be too much. That is why the emissions which you have already planned in the document "Justification of Investment" exceed the acceptable level We can't say that the ideas are environmentally balanced. What's more, the document should not be considered if it has not passed evaluation. Here, E.G. Vasilyuk is absolutely right.

Social questions. The law about chemical weapons which has just been adopted by the State Duma has two serious holes.

First, in the law about CW, there is no provision for the construction of a social infrastructure for residents of Planovy and Shchuch'ye, areas of the present CW storage. The Duma is discussing the social infrastructure for the areas of future CWD facilities. Where are these places? We don't know yet. They may happen to be near Shumikha, but not Shchuch'ye. This is the first discrepancy in the Duma CW law and it is very serious.

Without social infrastructure, the construction of the CWDF should not begin at all. The question raised by the head of the area administration about social tension is not our invention; it objectively exists. Nobody wants to instigate the people, but nobody wants to do anything at their expense either.

The second hole: The people who now live near the CW storage facility and those who will live near the CWDF should have the right to leave this place at the expense of the state. This was removed from the law; this was not allowed to stay in the law. It is a mistake of a legislator, but this mistake should by all means be corrected. No state body has the right to subject people to additional risk, people who have experienced this risk for decades.

I have made fully substantiated remarks. Last, money, and again money. The work cannot be started if the Government of the Russian Federation does not guarantee 100% financial support from beginning to end. Only after receiving this guarantee would it be possible to discuss and begin this work.

Grozdova, T.Yu., **Kokushkin, A.M.,** Association of Physicians "Health To Children"

MEDICAL OPINION ON THE HEALTH OF THE POPULATION IN SHCHUCH'YE AREA. EPIDEMIOLOGICAL SPECIFICS OF THE SHCHUCH'YE AREA POPULATION HEALTH

The investigation was aimed at evaluating the health of those living near the CWD facilities. Those suffering from diseases connected with the possible effects of chemical agents or their metabolites were evaluated. The epidemiological method allows for a statistically accurate estimation to be made on the health of different groups of people. This reflects the composition, dynamics, and territorial location of the diseases; this type of evaluation reveals cause-and-effect relationships which explain the appearance and development of infectious and non-infectious diseases as well as determine the optimum measures of monitoring the changes in the health of people in a particular territory.

Purpose of Investigation:

1. To make a brief assessment of climate-geographical, economical, medical-sanitation, and demographic characteristics of Shchuch'ye Area.

2. To reveal the differences between those sick with infectious and non-infectious diseases in Shchuch'ye Area so that this data may be compared with that of Kurgan Region as a whole.

3 To study the composition, dynamics, and territorial location of diseases for different groups of people in Shchuch'ye Area.

4. To estimate conceivable influences upon the health of the population due to the possible penetration of chemical agents into the surrounding environment.

Materials and methods. The following official documents are the informational sources concerning the health condition of the population:

- Series "Main Data of Health Service Facilities of Kurgan Region" published by the Health Department of Kurgan Region, 1987-96.
- Annual reports of the medical dispensaries in Shchuch'ye Area (forms 1, 12, 30, 31, 35), 1987-96.
- Annual reports of area hospitals and surgeon-midwife clinics (forms 12, 31).
- The reference about the condition of the water supply for Shchuch'ye Area for 1996-97 issued by the Area Sanitary and Epidemiological Supervision Committee.
- Demographic analysis data for 1987-96 issued by the medical statistic section of the Shchuch'ye Central Area Hospital.

The data contained in the above-mentioned informational sources was subject to the retrospective epidemiological analysis of levels, dynamics, and territorial spread of infectious and non-infectious diseases via generally accepted methods.

The evaluation of health conditions in Shchuch'ye Area of Kurgan Region was conducted taking into account possible consequences from acute and chronic (by low doses) effects of chemical agents of contaminated (arsenic-containing), quasi-contaminated (cyanide-containing), and suffocating (chlorine-containing) substances on people. The morbidity rate (total number of cases of infectious and non-infectious diseases) among the population of Shchuch'ye Area for the said period was permanently lower than the average regional value. The difference in the average morbidity rate values for 8 years is statistically trustworthy, t > 3.5, and made up 862.8 +1.9 in the area being checked and 1100.3 + 3.0 average in the region.

The infectious morbidity rate among the residents of Shchuch'ye Area was rather high, but its average value for 8 years (144.8 + 2.0) was lower than the average in the region (164.1 + 0.35). Nevertheless, in 1987-1996 the intensive values of infectious and parasitic morbidity rate in Shchuch'ye Area were higher than the average for Kurgan Region as a whole. It was found that the level of sexually-transmitted diseases in Shchuch'ye Area of Kurgan Region is steadily growing as it is in the country as a whole.

The growth in the morbidity rate is observed both for gonorrhea (Dt = 0.08) and for syphilis (Dt = 3.47). So, the total morbidity rate with infectious diseases does not classify Shchuch'ye Area as the worst administrative territory within Kurgan Region.

The relative analysis of dynamics and rate of occurrence of somatic diseases was based on publications which documented such diseases for the period of 1988-1995. In the general composition of somatic diseases in the area and in the region, respiratory diseases are the most common. The dynamics of the morbidity rate for these diseases show that within the period under consideration the intensive values in Shchuch'ye Area were permanently lower than the average for the region, but average 8-year values in Shchuch'ye Area were lower than in Kurgan Region as a whole. In a number of areas of the region, the said values exceeded the average for the region. For example, in the Kargapol area, the rate of respiratory illnesses went up from 539.0 to 577.0 per 1000 people.

High but lower than average regional morbidity rate were determined with the third order of confidence (t > 3.5) in Shchuch'ye Area are connected with affecting the nervous system and sensory organs as well as causing mental disorders. The documented fluctuations in the morbidity rate for such diseases in the area coincide with those in the region as a whole.

Between 1988-90, the rate of sensory organ illnesses in Shchuch'ye Area were slightly higher than average values for Kurgan Region. The average rate of osteo-muscular system and connective tissue illnesses for the population in Shchuch'ye Area (57.1 + 1.32) were determined with a high degree of statistical confidence (t >3.5) and are lower than in Kurgan Region as a whole. (79.2 + 0.25). The highest rates of occurrence of the said diseases in the area under consideration and in the region generally coincide with a high degree of confidence (t > 3); the average rate of circulatory diseases are lower in Shchuch'ye Area than the average for Kurgan Region. The average rate of skin and hypodermic diseases among the population of Shchuch'ye Area, determined as statistically trustworthy (at t > 3.5), are lower than in Kurgan Region. Dermatitis and eczema have the greatest occurrences in this pathology both in the area under consideration and in the region. According to the records, the intensive values of the rates of digestive diseases have increased since 1989 in Shchuch'ye Area and Kurgan Region as a whole. At the same time, the average

intensity values per 1000 people in Shchuch'ye Area are determined with a high degree of confidence (t > 3.5) and are lower than the average in the region. The documented dynamics of urinary tract diseases are characterized with a downward trend in 1992 and a notable increase in 1993-1995. At the same time, the average rate of urinary tract diseases in Shchuch'ye Area is lower than the regional average; this has a high degree of confidence (t > 3.5). Dynamics of new growths (neoplasms) revealed among residents of Shchuch'ye Area and Kurgan Region as a whole are equal. However, the general average rate of new growths in Shchuch'ye Area is lower than in Kurgan Region. This has a high degree of confidence (t> 3.5).

The average intensive values for blood and hemogenic diseases among residents of Shchuch'ye Area are documented as average when compared to the regional level. The dynamics of changes in the said values in the area and the region as a whole coincide. However, since 1993, annual intensive values for blood and hemogenic diseases in the area under consideration have considerably increased and are now higher than the average regional values. At the same time, for the Mokrousovsky and Mishkinsky areas of Kurgan Region, unlike other infectious and non-infectious diseases, the data reveals that congenital deformities prevail and are the more common in Kurgan Region. With this regard, the average intensive values of the defects in Shchuch'ye Area (3.25 + 0.1 per 1000 people) turned out to be higher than the regional average (2.8 + 0.05 per 1000 people) with a high degree of confidence (t > 3.5) It should be also noted that in some other areas of the region, (Shumikha, Safakulevo, Chastoozersky) during the period under consideration, even higher values were recorded, revealing a great number of congenital deformities during development. This may confirm mutagenic and teratogenic effects of the environment which unfavorably affect the population.

Thus, the comparison of the morbidity rate for different nosologic forms of somatic diseases for the period from 1988 to 1995 in Shchuch'ye Area and Kurgan Region showed that respiratory, nervous system, sensory organ, osteo-muscular system, circulatory system, skin and hypodermic diseases, digestive, urinary tract, endocrine system, metabolism, immune system, and blood diseases documented in Shchuch'ye Area are dominantly lower than the regional average. The confidence of comparison is very high, t = 3.5

Conclusions:

1. The analysis of official records and reports concerning the morbidity rate and demographic peculiarities do not offer any conclusions regarding the effects of stored chemical weapons on the health of those living in Shchuch'ye Area when compared with other administrative territories of the region.

2. Analysis of the composition, level, dynamics, and developmental trends of infectious and non-infectious diseases among the population of Shchuch'ye Area on the materials of separate dispensaries showed an irregular nature of occurrence of the said diseases in separate territories.

3. The city's population has a higher morbidity rate when compared to rural areas.

4. No relationship was found between the possible effect of chemical agents or their components and differences in morbidity rate for somatic and infectious diseases among those living in or near the CW storage areas (Shchuch'ye, rural population covered by the Central Area Hospital, population covered by specialists of Chumlyak local hospital) and in places remote from the CW storage facility (population covered by the Peschanskaya and the Kayasanskaya hospitals).

5. The morbidity rate for different diseases determined as a result of retrospective epidemiological analysis revealed territorial differences in the occurrence of different diseases, and their disposition serve as a base for further monitoring of the health of those living in Shchuch'ye Area. Early detection of changes in the morbidity rate may or may not be a result of the possible effects of chemical weapons during their storage or their destruction.

6. Medical facilities in Shchuch'ye Area are not staffed as needed when compared to other areas in Kurgan Region. Such a situation will impact the quality of identification and registration of patients with different diseases, especially in rural areas.

Summary:

1. The health condition of the population of the region and the inspected areas can be estimated as satisfactory (as compared with regional values).

2. The condition of health services in the region and in the areas being inspected are unsatisfactory.

3. It is necessary to plan for rehabilitation measures:

- for the organization of primary rehabilitation of the territory of the Peschanskaya Central Area Hospital, fulfillment of additional investigation of the thyroid gland pathology in the given area and determining it as an endemic zone;
- organization of secondary rehabilitation of patients from the dispensary group;
- fulfillment of clinical and immunological investigations on the territories located near the facility construction zone;
- planning the methods of further monitoring the condition of the population's health.

Evaluation of the health of children living in and around the CWDF in Shchuch'ye Area.

The given investigation was found necessary for solving the problems connected with the identification of the true cause of diseases involving the effects of the CWDF. The scope of the investigation is based on the criteria of singling out the model cases according to the tactics of performing the investigation laid down in the procedures developed by the Expert Committee of the World Health Organization.

Demidyuk, V.V., GOSNIIOKhT Leading Scientific Engineer

MONITORING AND DIAGNOSTIC SYSTEM OF THE CWDF IN SHCHUCH'YE

Ladies and gentlemen, friends!

Chemical weapons production monitoring and its diagnostic control can be considered one of the CWDF safety operation trends.

The CWDF must be equipped with a system for monitoring and diagnostic control which will obtain complete information about water and air conditions to provide clear objectives to the staff in maintenance, emergency and other situations.

Monitoring is a complex system of observing, estimating and forecasting the variation of the environment condition caused by the anthropogenic effect.

Monitoring of highly toxic substances at demilitarization facilities relates to the “impact” (local or sanitary/hygienic) monitoring type. It can be subdivided into two subtypes:

- monitoring of production control,
- monitoring of territories adjacent to the facility,

Industrial enterprise monitoring is a potential source of pollution. The common source of the anthropogenic effect on the environment is the CWDF, and therefore, the main goal of the CWDF control is prevention (or at least, minimization) of this effect. The main goals of control-monitoring are as follows:

- accurate time predictions of emergency situations caused by a violation of technological process regulations or a failure in a process equipment seal;

- sanitary/hygienic monitoring of the operational staff’s working conditions;

- a limit to and control of tolerable waste;

These problems require :

- norms and regulations basis;
- highly efficient plenum-exhaust ventilation in operation rooms;
- process for automatic control;
- means for sampling;
- well-developed methods of laboratory air (surfaces, etc.) diagnostic control

The above listed problems could be solved by the diagnostic service of the enterprise itself.

The main problems to be solved by the enterprise diagnostic service are as follows:

- engineering analysis;

- process analysis;

- input control of feed stock and materials;

- process equipment and leakage control;

- analysis of air at the enterprise and sanitary/hygienic monitoring of operational personnel working conditions;

- maximum permissible emission control;

- diagnostic control during maintenance, preventive, emergency and other works;

- water and air pollution control of adjacent territories.

Besides the medical monitoring problem, the medical control and analysis of operational staff health is required.

To solve these problems a special multi-profile service is organized at the CWDF which includes:

- the technical (technological) diagnostic laboratory;

- the input control laboratory;

- the air analysis laboratory;

- the laboratory of automatic means for air control;

- the laboratory for metering equipment calibration;

- the environmental laboratory.

It is clear that these could provide highly effective and relevant information concerning air pollution and thus provide safe operation to the facility.

The diagnostic laboratory is to be equipped with exhaust cabinets with an automatic system for sampling the air in technological rooms.

The technological control is to be conducted by means of a certified method of analysis.

The sanitary/hygienic control of operation staff conditions is to be carried out in accordance with the method approved by the RF Health Ministry.

The system of monitoring includes:

- continuous automatic control of the concentration of chemical agents in the air of production rooms, control provided through stationary gas-signalers detecting the excess of chemical agents over their maximum permissible values;

- continuous automatic monitoring of process equipment and tank leakage provided by stationary expedient analysis devices;

- periodic toxic gas content control in the air of the operation zone at the level of their maximum permissible values, control provided by portable fast response apparatuses (HP-05 type) and by means of sampling apparatuses (“SHTIL” type) with further analyses of samples in the diagnostic laboratory;

- expedient analysis equipment to control sterility of process equipment surfaces (“TH-01” type;

- periodic monitoring of GPLs (by vehicle-based route station) in the sanitary protection zone, provided by sampling “CYCLON”-type instruments with subsequent analysis of samples in the diagnostic laboratory.

To provide optimum equipment operation for conduction of monitoring and real-time output of signals indicating environment pollution with chemical agents, the process equipment must be mounted in boxes and ventilated cabinets. Stationary apparatuses and their sensors are to be mounted accounting for direction and intensity of air flow around the process equipment working with toxic substances.

The equipment used during repair, preventive, emergency, other operations:

- portable gas indicators and gas analyzers for alternating control, equipment with devices for express analysis, for air sampling and further analyses of air samples in the diagnostic laboratory (“HP-05” type);

- to detect the source of gas hazards and determine the pollution boundaries of chemical agents using the portable apparatus (“LOZA” type);

- for sterility of treated surfaces the express means of the “TH-01” type.

The system of monitoring and diagnostic control must provide selection, storage and output of information to various levels of control, including gas-hazard warnings at work stations.

Monitoring territories adjacent to the industrial facility

The main goal of monitoring territories near the industrial facility is to control safety operations of the facility in terms of the environment, detection of pollution levels and a comparison with norms, as well as the output of recommendations, if necessary, as to how to remove this pollution.

The territories adjacent to the industrial enterprise include the sanitary protection zone and the dwelling zones.

The monitoring of adjacent territories is organized in accordance with the general requirements of GOSTs (State Standards), that is, determination of environmental conditions.

We have to make only one assumption: since the maximum concentration of chemical agents at the external boundary of the sanitary protection zone must not exceed the General Population Limit, the monitoring of the sanitary protection zone's external boundary must be similar to that of the GPL.

To provide an accurate understanding of the monitoring results obtained at the territories close to the facility, it is necessary to determine (with the use of specially prepared techniques) the influence of the background concentrations of various substances (near to ground air layer) on the determination of controlled substances.

Monitoring the organization of the adjacent territories is based on the production source's priority in environment pollution.

With this connection, monitoring of the sanitary protection zone is conducted through sampling (with further analysis of samples in the laboratory) in accordance with the schedule of route and plume sampling program: complete, incomplete, short-term or one-sample-per-day or one-sample-per-shift for normal operation of the facility (after been agreed upon with health care authorities).

The sanitary protection zone is to be positioned by at least 8 compass bearings (North-N, Northeast-NE, Southeast - SE, South-S, Southwest-SW, West-W, Northwest-NW).

Then the points of samples selection on the intersection of the sanitary protection zone external boundary with the compass bearings within the limits where cars can travel on existing roads. The numbers are assigned to the points of sampling. As a rule these numbers are [11] 1, 2, 3, etc., beginning from the north point.

The points of sampling along the production square perimeter are designated similarly. As a rule these numbers are [11] 21, 22, 23, etc., beginning from the north point.

The bench marks with numbers are to be put in the points of sampling. The stationary observation stations can be organized near the bench mark points. The procedure of air sampling places selection is as follows:

- determine the wind direction, e.g. NE;

- determine the air sampling places from leeward and windward sides. (leeward, i.e. facing the side from which the wind does not blow; windward, i.e. exposed to or facing the wind).

The samples are selected simultaneously : the first one in the ¹ 6 point, the second one in ¹ 26 and ¹22. The samples selected in the windward ¹¹2 and 22 are the background ones in relation to the samples selected in leeward points ¹¹6 and 26.

Samples of soil, water and vegetation are also to be selected periodically, in accordance with the schedule.

All the samples are to be analyzed in the laboratory.

The sampling of various media is to be conducted during monitoring of the dwelling zones, in accordance with the agreed program.

It is useful to use the existing observation stations for the monitoring of populated places.

The air pollution control stations are subdivided into stationary, line route and movable.

The permanent station is for the continuous registering of polluting substances or sampling of regular air for further analysis.

The permanent and the route stations are located in the places selected by the base preliminary study of industrial air pollution in the town (the settlement), waste gases from cars, homes, etc., taking into account the conditions of their dispersion. The physical-geographical features of the settlement, as well as the meteorological conditions and the location of pollution sources are to be examined during such a study. A list of the main contaminants is to be prepared as well.

The location of the permanent stations must be in accordance with local services of GOSKOMGIDROMET and representatives of Sanitary and Epidemiological Supervision Committee.

These stations are to be located in the central part of the settlement, in the dwelling regions of various housing types and in the recreation zones on the territories adjacent to the highways or roads with extensive traffic.

The stationary bench mark stations designated for detection of long-term changes in the main and the most widespread contaminating substances are to be selected from the set of permanent stations.

The arrangement of permanent stations must be preliminarily substantiated and approved by the bodies that have the right to make decisions on this problem.

The line route station is destined for regular air sampling of a fixed point during observation with mobile equipment.

The mobile plume station is designed for sampling air to determine the zone of this source influence. These analyses are most important during breakdowns and during the emergency situation responses. The air sampling is conducted by the post at the points located at fixed distances from the source of pollution. The stations are moved in accordance with the direction of the plume-shaped axis movement observed from the source of pollution.

Each post must be located in open air from all sides covered by a non-dusting coating, e.g. asphalt, so that the presence of green plantations, buildings, etc., will not affect the measurements.

As a rule, the obtained samples must be examined in the laboratories.

The representatives of Sanitary and Epidemiological Supervision Committee and GOSKOMGIDROMET monitor the major polluting agents at populated places and territories close to the facility.

Monitoring of polluting agents characteristic of the facility is conducted by the facility services.

The method used for monitoring - sampling with subsequent analysis in the stationary laboratory.

Monitoring in the case of an emergency situation

The general assignments: pollution source detection and determination of toxic gases content in the operation zone, production platform, sanitary protection zone and adjacent territories, if required to provide rapid conduction of measures for the emergency situation liquidation.

Detection of the source of the emergency situation is the main goal of this type of monitoring. The more accurately and quickly it can be done, the less harm will occur and the easier it will be to eliminate the pollution source

To detect local gas hazard and seal failure areas, the portable seal failure detectors are used.

The system presented in this report was designed and developed for many years. This monitoring system was tested on the mobile complex for CWD near the town of Chapayevsk. The system of monitoring and diagnostic control was tested during start-adjustment works with neutral mediums.

Krasikov, M.A., Chairman of the Shumikha Area Environment Control Committee

THE SHUMIKHA AREA ENVIRONMENT CONTROL COMMITTEE'S OUTLOOK ON THE PROBLEM OF CHEMICAL WEAPONS DEMILITARIZATION

Dear Ladies and Gentlemen, Hearings participants!

Unfortunately, most of us present here are the hostages of government decisions.

If the designers and developers of the destruction technology and facility, that are trying to convince us all that the chemical weapons demilitarization process is absolutely safe, would live in our zone together with their families, then we would agree; I think this could be a guarantee of safety.

In recent years, we have heard much contradictory information about the chemical weapons demilitarization in the Planovy settlement of Shchuch'ye Area. First of all, we, i.e. the residents of the Shumikha Area, need complete and truthful information concerning the safety (or more precisely, the hazard) of living in this region. The chemical weapons demilitarization plant is supposed to be built on the boundary of the Shumikha and Shchuch'ye Areas. We think that all the prerequisites exist to consider these regions as a single one, because air masses flow from the north and the southeast. So, in the case of any damage to the facility, the residents of our region will be harmed first. Highly toxic chemicals do not know any frontiers! They are not a herd of cows that can be led back to Shchuch'ye Area.

The social tension in the region, together with unsolved environmental problems and the absence of truthful information and a legislative basis aggravate the situation. There is no guarantee of safety for the population and environment. There are no technologies such as this, in the world, that are absolutely safe.

Who knows how much the lives of people living in territories near the chemical weapons destruction facility will be shortened and what negative effects the facility will have on their health. We never stopped to demand for permanent medical check up of our residents. Much was said about disease rates, and birth and death rates. I would like to say a few words about disease rates. I hardly believe that they will decrease consistently when there are no buses for the rural population, which consists of about two thirds of the total population in the region. They can't get to the hospital and are too poor to buy bus tickets anyway. I would like to know about the sensitivity of the equipment. We do not have any highly sensitive instruments at our base and therefore the presence of chemical agents is determined using (pardon me) one's nose, by waiting until there is a bitter taste in the throat and tears fall from the eyes. This is what we now have for the detection of highly chemical agents.

We are fed up with numerous explanations. Therefore, I think that the people living in the vicinity of the facility must receive compensation for harm, risk and hazard. It is irrefutable that the Shumikha Area must be included in the zone. It is not clear absolutely who determined the so called protective measures zone 3000 meters from the facility zone. I would not call this zone a protective measures zone. What can one do in the case of an emergency if one is 3000 meters from the facility zone! The chemical age will reach the Shumikha Area territory in 8 minutes if the wind speed is approximately 10 m/sec.

I always say that released airborne chemical does not care about neither sanitary protection zones nor boundaries of territories. Hankered after social infrastructure, Shchuch'ye Area representatives and Kurgan Region representatives who visited Moscow convinced the Shchuch'ye Area representative meeting to approve the construction of the CWDF. Pardon me, friends, but I think that these gentlemen betrayed their people and will be judged accordingly!

I am convinced that not only the representatives of the regions, but the entire population of the Shchuch'ye, Shumikha, Safakulevo, Dalmatovsk, and Krasnoarmeisk areas of the Chelyabinsk Region must adopt the proper decision.

The experts tried to convince us that bitumen-salt mass is the production waste that can be touched and smelled. Let them touch it, smell it or even put it on a loaf of bread, nevertheless I say that it is very hazardous.

Our Shumikha Area «Chemical Safety» Organization offers the solution to the problem. There are uninhabited areas in the north woods of Russia. Thousands of kilometers without any dwellings! The plant should be built there. It would be necessary to organize safe transportation in containers by planes or trains. According to the current project, a railroad would be built in Shchuch'ye Area and provide transportation from the Planovy settlement by railroad. Does this means that it's possible to transport chemicals by railroad in Shchuch'ye Area, but impossible in other regions?

Legislation gives people and social organizations the right to demand environmental expertise, to conduct meetings and demonstrations, to address the administration about downgrading or completely stopping such enterprises and to take action against damages to health. We must not wait, we must exercise these rights to their fullest. I am sure that people of the Chapayevsk town will.

There is no place for a chemical weapons demilitarization facility on Shchuch'ye land!

We demand meetings or Hearings in Shumikha.

We demand removal of CW from Kurgan Region.

Time will tell who is right and who is wrong here!

Kolesnikov, V.B., 31 State Design Institute of Special Construction Ministry of Defense, RF

Plashchinov, S.A., Architecture and Construction Committee of Kurgan Region Administration

DEVELOPMENT OF THE SHCHUCH'YE INFRASTRUCTURE AS A RESULT OF THE CHEMICAL WEAPONS DESTRUCTION FACILITY CONSTRUCTION

The Statement of Work of the 31st Design Institute of Special Construction (GPISS 31 MOD RF) provided for the design of residential, social facilities, and utilities for the entire CW Destruction Facility.

GPISS 31 MOD RF (which will celebrate its 50th anniversary on 9 July) has accumulated extensive experience in designing and constructing special types of

facilities. For about fifteen years, we have been closely working with the Open Joint Stock Company "GIPROSINTEZ" from Volgograd which is the Facility Industrial Area designer.

In cooperation with GIPROSINTEZ, we designed and completed construction of a similar type of facility in Chapayevsk and developed the feasibility studies for the facility construction in Kambarka, Udmurt Republic and Gorny settlement, Saratov Region.

The following basic design concepts were defined prior to putting together the Justification of Investment of the Shchuch'ye facility construction:

1) supply the Industrial Area with all types of utilities based on GIPROSINTEZ requirements;
2) consider Shchuch'ye Area population demands during construction of various facility areas;
3) base the estimated need for utilities, hospitals, residential and public buildings on the prospective number of Shchuch'ye residents in order to provide the residents with apartments and services in accordance with modern requirements;
4) comply with all the facility personnel and population safety requirements in emergency situations.

We tried to fully reflect all these concepts in the Justification of Investment documentation.

In December 1996, a group of 20 GIPROSINTEZ, GPISS 31 MOD RF and the MOD specialists worked in Kurgan and Shchuch'ye for two weeks to study the current conditions. Some specialists visited Åkaterinburg.

We collected the input data and technical specifications, and we visually examined the proposed construction sites.

I would like to take this opportunity to thank the regional and local specialists for their assistance in gathering the documents as well as for their close attention to our problems and business-like approach.

We tried very hard to take into account your proposals and include them into the Justification of Investment documentation.

Not everything may have gone smoothly. We will appreciate your constructive suggestions. The Pre-Design Stage has been developed; however, to constructing the facility using the Pre-Design Stage results is next to impossible. The basic concepts for the facility construction have been defined. various studies have to be performed as well as geological surveys in order to finalize some ideas. We need architectural and layout data from the Kurgan Architecture and Construction Department reflecting all of your proposals.

Following the JOI approval, we will be able to proceed with the design documentation development, where the "design" part shall be approved together with the total construction cost.

The design documentation shall go through Kurgan Region Expert Review prior to the approval. Following the approval process, the technical documentation will be developed and the construction process will begin. Our experience in designing and constructing similar facilities showed us the necessity to construct roads, bridges, utilities, residential and social infrastructure facilities on a top-priority basis. This requirement has been taken into consideration during the construction developmental process.

BASIC SOLUTIONS

One thousand one hundred fifty-eight people will operate the Facility Industrial Area.

The total number of the residential area population including family members will be 3,300 people. The Shchuch'ye total population (based on the data provided by the Administration) is 10.8 thousand people. The town prospective population number is 14.1 thousand people.

These are the basic figures for all types of estimates. Based on the residential area standards providing 18m^2 per person, the town housing fund shall constitute 253.8 thousand m^2. Currently the residential fund constitutes 164 thousand m^2 (in accordance with the certificate). Another 89.8 thousand m^2 of residential housing must be constructed. We used the same approach calculating the required number of schools, hospitals, department stores and other facilities. This is a general estimate which is subject to finalization during subsequent activities.

Shchuch'ye Area population can be involved in operating various CWDF associated facilities. There will be approximately 1000 vacancies.

FACILITY AREAS

In accordance with modern requirements, the construction of the following areas is planned to support the Facility Industrial Area operation and create the required living conditions for the Shchuch'ye population:

- residential area for facility personnel including families (3,300 people);
- the facility barracks area for the security personnel and emergency crew;
- motor vehicle pool for motor vehicles supporting the facility and auxiliary buildings' operation;
- Shchuch'ye central boiler house for the town heat supply;
- sewage treatment facilities to treat the town's uncontaminated effluents;
- Shchuch'ye fire station;

- water intake wells and pump station to supply the facility and the town with potable water;
- transformer substations 220/100 kW and 110/10 kW, supplying the Industrial Area structures, Waste Burial Site, residential and public buildings with power;
- gas distribution stations and gas pipelines to supply the facility and the town with gas;
- communication lines and associated linear and cable structures to provide the facility and the town with communication services;
- Industrial Area fire stations;
- roads and railroads to support the facility construction and operation; and
- other auxiliary facilities supporting the Facility Industrial Area operation (boiler house, water treatment station, helicopter pad, etc.).

To define the social infrastructure facilities' construction scope and sizes, 31 GPISS MOD RF was guided by GIPROSINTEZ initial data, technical specifications and requirements of the regional organizations as well as materials obtained as a result of the activities conducted by the reconnaissance committee at the end of 1996 in the projected construction area.

1. Power Supply

The facility's approximate power consumption is estimated at 20.0 MW including 10.5 MW for the Industrial Area and Waste Burial Site; 6 MW for the Shchuch'ye facility area; and 2 MW for the social infrastructure facilities.

Construction of the following structures is proposed to support the facility loads in accordance with the technical specifications provided by the "Kurganenergo" company:

- substation PS-220/110/10 kW;
- transformer substation in the Industrial Area proximity 110/10 kW.

The length of the 110kW power transmission line is approximately 15 km (2x15) for Site 5 and 20 km (2x20) for Site 3.

The Shchuch'ye facility's power will be supplied from the substation designed to be located in the barracks area.

2. Water Supply and Drainage

2.1. Water Supply

The total potable and service water supply demands will constitute 7000 m^3/day including:

- the destruction facility – 300 m^3/day;
- Shchuch'ye facility and areas under construction to support the CWDF – 2,300 m^3/day; and

- current and potential Shchuch'ye consumers – 4,400 m^3/day.

The CWDF total process water demand is 1325 m^3/day including:

- the Industrial Area and Waste Burial Site – 270 m/day;
- boiler house – 1,055 m^3/day.

Daily water demand will increase to 3,100 m^3/day during the replenishing of the fire water reservoir.

Following is the description of the potable water supply system: water from the three wells under design will go through the water pipelines using reservoirs and pump stations to the facilities located both in the Industrial Area and in Shchuch'ye.

The following length of the two water pipelines is planned, taking into account the Industrial Area:

- from the pump station to the Site 3 Industrial Area facilities – 20 km (2x10 km), diameter 90 mm;
- from the booster pump station to the Site 5 Industrial Area facilities – 16 km (2x8 km), diameter 90 mm; and
- from the water intake area to the Shchuch'ye pump station – 26.6 km (2x13.3 km), diameter 400 mm.

The cost estimate shall take into account the fact that along the water intake line to Shchuch'ye the following must be constructed: two river crossings (across the Miass and Chumlyak), five crossings for existing highways, one crossing for the railroad and pipeline routes.

Two options shall be considered during development of the process water supply system:

Option I – pump out and treat the Miass River water;
Option II – Shchuch'ye waste water after treatment.

The first option provides for construction of the river water intake area, riverside water intake station, water treatment station including pump station and water pipelines with 160 mm diameter and 28 km (2x14) in length for Site 3 or 18 km (2x19) for Site 5.

The second option provides for construction of the water pipeline 28 km in length (2x14 km) for Site 3 and 18 km (2x9 km) for Site 5, draining water to the Industrial Area facilities from the treated water drainage collector.

Due to stringent standards of water quality, both Options I and II provide for the construction of the water after-treatment and distillation systems.

2.2. Water Drainage

Treatment of the Industrial Area facilities' waste water will be carried out in accordance with the GIPROSINTEZ documentation.

The plan is for the process water to be drained from the boiler house, after-treatment, and distillation stations to the evaporation sites. Shchuch'ye waste water totaling 6,000 m^3/day will be drained along the pipelines to the full biological purification treatment facilities and further on will be drained along the 315 mm diameter and 38 km (2x19 km) length water pipelines to the Miass River, in accordance with the technical specifications.

3. Heat Supply

The facility's heat supply system will be decentralized (over 10 km distance between different groups of services) including construction of 2 boiler houses for the following needs:

- for the Industrial Area and Waste Burial Site; and
- for the facility areas located in Shchuch'ye and for the town itself.

Natural gas will be used as the basic type of fuel, black oil will be used as the backup fuel. The Industrial Area boiler house will have two KV-GM water boilers and two DE steam boilers, the fuel storage warehouse being 2x1000 m^3.

The length of the heat supply lines is as follows:

- for the facility needs – 10 km; and
- for Shchuch'ye – 50 km.

4. Gas Supply

Below is a list of natural gas services:

- Industrial Area process services;
- Industrial Area central boiler house under design;
- Central boiler house of the facility areas in Shchuch'ye and the town itself;
- Kurgan Region natural gas services, in accordance with the technical specifications provided by "Uraltransgas" company on gas transportation and shipment; and
- Facility residential area and the town's needs.

The construction of the following gas lines must be started to support the heat supply system in accordance with the technical specifications provided by the "Uraltransgas" and "Kurgantransoblgas" companies:

For CWDF needs:

- 7,4 MPa gas pipeline/branch line for “Peschanoye-Koledino-Shumikha”, 400 mm in diameter, line length – 78 km;
- gas pipeline/branch line “Shumikha-Shchuch’ye”, 150 mm in diameter, line length – 27 km;
- gas distribution stations on the Shchuch’ye eastern outskirts;
- associated structures and utilities; and
- 1.2 MPa gas pipelines from the gas distribution station to the Industrial Area gas distribution substation and the town gas distribution substation 25.4/20.6 km (Sites 3/5).

For Kurgan Region needs:

- gas pipelines/ branch lines to the following settlements: Safakulevo, Al’menevo, Tselinnoye, Mishkino, Yurgamysh, and Kirovo, total line length – 216 km;
- 1.2 MPa gas pipelines for Shchuch’ye Area gas supply, line length – 300.9/305.65 (Sites 3/5); and
- gas distribution stations.

5. Communication Facilities

The provision of all the necessary communication means is envisaged for facility control purposes in the course of its operation.

An automated local warning system will be set up to warn the population in a timely manner.

In order to achieve this goal, the following lines are projected in accordance with the communication plan developed as part of the Justification of Investment and the technical specifications issued by Kurgan Region’s “Electrosvyaz’” Company:

- wire communication line from the Kurgan communication switchboard to the Shchuch’ye switchboard, approximate length – 213 km;
- communication switchboard at the facility Industrial Area, barracks area, communication switchboard refurbishment at the existing CW storage facility, Shchuch’ye switchboard.

To back up all types of wire communication lines, the communication arrangement provides for the following radio relay communication lines: communication switchboard of the existing CW storage facility and the Industrial Area communication switchboard.

6. Off-Site Transportation

To construct and operate the CWDF, constructing new and refurbishing existing roads and railroads is planned in the following scope:

- construction of a new single-track railroad from the existing CW storage site railroad station to the Industrial Area. The approximate track length is 19 km. Reconstruction of the existing siding to the station – 5.5 km;
- construction of a new single-line bridge across the Miass River – 150 m in length for Site 3; and
- construction of the following type of bridges across the Chumlyak River:

    - road bridge – 60 meters;
    - railroad bridge – 60 meters;
    - construction of new and reconstruction of existing highways for Site 5.

THE FACILITY RESIDENTIAL AREA SUMMARY DESCRIPTION

The plan is to construct about 90 residential buildings providing a total of 89.9 thousand m^2 housing for the facility's personnel arriving from other locations. 30 thousand m^2 of residential housing is to be constructed for the local residents as well as Shchuch'ye residents involved in the facility's operation.

The following types of buildings need to be constructed to support normal operation of the new town having a population of 14.1 thousand people:

- schools for 596 students;
- 250-bed hospitals, polyclinics for 115 patients per shift, drug store; and
- preschools with swimming pools.

In estimating the cost of required cultural, medical, and public facilities we proceeded from the demand of 14.1 thousand people and came up with the following:

- Leisure Center for 500 people including cinema, dancing hall and the area required for the needs of various amateur clubs;
- gym with swimming pools and a rentable area of 2,153 m^2;
- cafeterias;
- laundry, dry cleaning;
- sauna for 20 people;
- local post office and telephone; and
- hospital, etc.

CONCLUSIONS

Construction of the CW Destruction Facility will create a powerful infrastructure system in Shchuch'ye Area. Following implementation of the destruction program, the infrastructure elements thus created can be used to establish a new industry. The local Administration, within the framework of the Regional Development Program, should come up with proposals on establishing new industries in order to take into account said proposals during the construction of the destruction facility.

Shchuch'ye Area residents will have reliable energy sources and main utility networks.

Construction of central boiler houses, sewage treatment, and water intake facilities will contribute to improving the environmental and epidemiological situation in the area, as a result of decommissioning of local boiler houses and the elimination of cluttered dumps and landfills.

Alekseyev, V.A., Head of Udmurt Republic Kizner Area Administration

NECESSITY OF PREPARATION MEASURES FOR THE PROBLEM OF CHEMICAL WEAPONS DEMILITARIZATION

Residents of Shchuch'ye Area, honorable participants of Hearings, the organizational Committee and all invited attendees!

I extend with pleasure warm greetings from the residents of the Udmurt Republic, where the two chemical weapons storage bases are located, housing about 30% of Russia's chemical weapons. The head of the Kambarka region, Mr. Anyakin Vladimir Yakovlevitch, is present here as well. Vladimir Yacovlevitch, please stand so we can all see who you are.

I ask you to greet him because he is probably the first Head of the Administration in Russia who has experienced the feeling of speaking with people after a Governmental Statement concerning the construction of a facility for chemical weapons demilitarization.

I would like to inform you about what we do. My technical report is scheduled for tomorrow so now I will tell you about our region, about what we do in this field.

Our region is very much like yours. You are in Asia and we are in Europe. We came here by car to see our beautiful nature. I am convinced again that our country is truly beautiful and the people are wonderful. Unfortunately, all along the way we saw obvious environmental abuse. Last year, survivors of the MAYAK-70, CHELYABINSK and CHERNOBYL accidents, touring to promote awareness of these catastrophes, stopped in Kizner to greet people living in the chemical weapons storage area. Our problems are very much like yours. Unemployment is about 15%; we have great difficulty farming; our enterprises are poorly equipped. This is due to the presence of the CW facilities. It is clear that manufacturers are not going to build their plants near the storage facility. First of all, it is not profitable; second, it is extremely risky. We tried to think of another means of industry. Our region is rich with minerals. We have mineral water, oil, peat, and forests. Businesses asked us how we intended to sell water from the area in Kizner, where the chemical weapons are stored. We decided there was no reason to wait any longer because the situation would only get worse. There must be one principle: Don't waste time. We now work successfully on four levels:

First, the local level. We formed a commission at the Administration that helps people affected by the armory and its conditions. That is, we have guaranteed privileges when sending our children to any college in the Udmurt Republic. We have initiated some legislative acts at the regional level to improve people's lives.

Second, the Republic level. I would like to tell you that we have had good results. Together with Kambarka and the conventional problems committee, we obtained a statement from the Udmurt Government defining the involvement of each governmental department in the problems of CW demilitarization. The Udmurt Republic will give our region and the Kambarka region funds in addition to the budgetary expenditures. We could endure substantial losses this year, but a new law about CW demilitarization was approved. This law says that every Republic, as an entity of the Russian Federation, can approve its own acts and regulations. Last year, we proposed assigning special status to the Kizner and Kambarka regions, and the State Council of Udmurt Republic approved this proposal on July 1st. In principle, the Udmurt Republic becomes responsible for issues such as pensions, wages and other problems connected with the safe storage of chemical weapons. We think that the work of our region is well known at the state level. We take an active part in the adoption of laws concerning chemical weapons. We send our objections to the Russian Duma and work for them. Natalya Ivanovna Kalinina, stand up please, so we can see you. She served on the defense committee and worked with our objections to the laws to the very end. The last corrections were supported by the communist fraction, the YABLOKO fraction and others. They are in favor of our demands. We work rather actively on international relations. We asked about the CW problem and found out that there was no need to wait for the government to come to a decision and work the expenditures into the federal budget. In the 1997-98 Justification of Investment for this project, we made changes to the parts about social and engineering infrastructures (a total cost of several hundred billion rubles). We are not going to take any "living" money from the state.

Last, I want to talk about social movements and organizations in particular. I think that their activity can be estimated using only one criterion: usefulness. What they've done or whom they've helped: that is the main question. Sometimes I do not know what this or that social organization does (especially if this or that organization is in Moscow). It is easy to talk idly. So we went the other way: the social organization, the "fund for support of residents dwelling in the zone of chemical weapons storage". This fund works very effectively, and people are pleased. We help many people who are hungry and often subjected to diseases. We pay for operations and organize medical care for the rural population. The fund continues its work, registered as a social organization in the Kizner region territory. We also got help from the "Chemical Safety Union." We have the representative of the "Chemical Safety Union". She got the PC but unfortunately we still could not use at a full scale. It is true that our fund works. Of course it can occur that the facility for CWD will start operating sooner than the facility in Shchuch'ye. Be assured that we will let you know.

Last year, the National Organization of Green Cross sponsored our children in the Republic of Bielorus'. This year, they will visit, together with your children, the town of Vladimir. Come and see. I suppose that it could be useful. I think that the regions must

meet each other so they know how to help each other in this or that situation, that is, not just the administration heads should meet, but representatives of the grass roots movement (teachers, doctors and other professionals) should as well.

Permyakov, V.S., Head of the Kurgan Region, Civil Defense and Extraordinary Situations

ON THE MEASURES FOR THE SAFETY OF SHCHUCH'YE AREA RESIDENTS

The forecasting of possible extraordinary situations was handled by the staff of the Kurgan Region Civil Defense together with Hydrometeorology and Environment Monitoring Center specialists from Kurgan in order to appraise possible extraordinary situations that can be caused by waste from chemical agents at places where chemical weapons are stored. This work was conducted on the basis of recommendations by the *All-Russia Scientific-Research Institute of Civil Defense and Extraordinary Situations* regarding the protection of civil populations dwelling near structures for chemical weapons storage and demilitarization and the interaction of the entities in charge in cases of extraordinary situations at these structures.

During this project, the most unfavorable meteorological conditions were assumed and all the conditions and peculiarities of the major chemical weapons stored were taken into consideration. For the project, the approximate radius for the protection zone for the aggregate type of chemical agents was 8 km with an area of 201 km^2. There were 6 settlements in this zone, with a population of 13.2 thousand. The protective measures zone for Sarin (nerve gas) used a 20 km radius and an area of 1256 km^2, and a population of 20.1 thousand, with 31 settlements. The plan for emergency situations, the site plans and the CD and ES staff plan of action were designed by the area's CD and ES staff together with the military detachment headquarters. The protective measures to provide for the safety of Shchuch'ye Area population were developed on the basis these plans.

The main methods for population protection from chemical age attacks are the individual means for protection of respiratory organs, using various types of respirators, and the evacuation of people to regions that were not subject to contamination by chemical agents. For the non-working population, 607 respirators are stored in the warehouses of the Administration area, along with antidotes - «TAREN» in the amount of 14.2 kg, and «ATROPIN» in the amount of 75 liters. A portion of these protective means is designated for the residents of Shchuch'ye Area. These respirators and antidotes are put in long-term storage. The Administration area provides the planning measures for the distribution of these respirators and antidotes during the «special period» or in case of extraordinary situations. The Administration oversees their preparedness, as well as their availability, replacement, and storage. The supply of antidotes, respirators and protective chambers for children is planned for all the residents of Shchuch'ye Area, taking into account their age categories.

The provision rate of the population in the region with respirator devices is 100%. 280 respirator units for adults and 220 units for children were given to the

PLANOVY-1, PLANOVY-2 settlements and to the military settlement by the Administration.

The CD and ES staff is prepared to transfer the various respirators from the storage warehouses to Shchuch'ye Area Administration.

The area CD and ES staff, together with the area evacuation departments and representatives from Shchuch'ye Area developed the population evacuation plan in case of chemical hazard. The evacuation process steps as well as the destination points are given in this plan. The plan describes the detailed calculation of the transport required for evacuation as well as the problems of dwelling and feeding the people. Shchuch'ye Area Environmental Control provides the monitoring and laboratory control services during routine operation of the facility. Their work is coordinated by the Area staff of CD and ES, the head departments of Kurgan Region State Committee for Environment Control, the area veterinary and agrochemical laboratories. It must be noted that not all the laboratories have the adequate number of up-to-date highly sensitive CA detectors detection, and Shchuch'ye Area only has the VPKhR (manual chemical detector). The CA detection means do not allow for operational monitoring of chemical situation in the cases of contingencies at the chemical weapons storage and demilitarization facility. The CD and ES Staff proposed various population protection measures for the design organizations to include in the Justification of Investment materials for the CW destruction facility. In particular, the following was proposed:

- build the shelters for operational personnel with three modes of ventilation;
- build a warehouse (1600 m^2 total) in Shchuch'ye to amass protective means, antidotes and medical supplies for the population, since there is the hazard of being exposed to chemical agents
- replace the existing warning equipment in Shchuch'ye;
- have the area Administration provide Russian Extraordinary Situations warning system information and control section building and its interface with the regional and the area ES committees;
- provide means for warning the population within two-kilometer radius of the CA transportation routes;
- provide reserve power supply sources for control and warning equipment
- provide social protection and rehabilitation measures;

The design institutes (31 institute and «GIPROSINTEZ») took our proposals into general consideration. The area Administration sent a letter to the RF ES Ministry with a request for additional staff units and a chemical-radiometric laboratory to be able to provide permanent control of environmental pollution. We received an answer from the RF ES Deputy Minister letting us know that our requests would be realized in the first half of 1997. Unfortunately these proposals have not been taken into consideration during the reorganization of the CD and ES staff structure.

The head of the Administration sent a second letter to the ES RF Minister with a similar request (№. 01-1-317 from 06.26.97)

Dave Ostler, Representative of the Residents Advisory Committee, Utah
Gary Griffith, Tooele County Commissioner, USA

ACTIVITIES OF THE TOOELE RESIDENT'S ADVISORY COUNCIL IN AMERICAN CWD

Dave Ostler

It is a great pleasure to be here in this conference hall. I feel at home here among my friends.

My name is Dave Ostler. I am a member of the Resident's Advisory Committee in the CWD process. I am from the state of Utah which is very similar to your residence of Shchuch'ye. The population is rather small, approximately 2 million people. Our state is located in the western part of the USA, in the Rocky Mountains, 4,000 feet above sea level. The difference in time zones is 12 hours.

CW inventory in Tooele is approximately 43% of the USA's entire CW inventory. Several years ago, we went through the same process you are now going through. We were also very concerned about safety issues. Having CW in your backyard is like living next to an elephant. You want it to disappear but you don't know how. In other words, we have faced the same problems you are facing now.

Our facility has been in operation since last August. We apply incineration technology, and you may have heard in the news that operation of the facility has been halted four times since its start-up. Operation was stopped for many trivial reasons related to maintenance of the equipment that allows the process to go smoothly. You should know that none of the facility closings were connected with fatalities, injuries, or accidents.

I would like to describe briefly the activities of the Resident's Advisory Committee, called "Residents' Committee". The Committee includes 9 members appointed by the Utah State Governor. We are volunteers; we are not paid for this job as we serve for the benefit of the population. The Committee consists of 3 representatives from Tooele, Utah, where the facility is located; 1 representative of the Environmental Department; 2 public representatives concerned about safety of the population, and 3 scientific consultants from Utah. It may interest you that 2 committee members, i.e. public representatives, participate in the process of issuing licenses for the facility operation. The facility can't start operating without a permit from the Solid And Liquid Waste Department, and if a Department specialist finds facility operation unsafe, the facility can be closed. I would like to say a few words about the committee activities.

We invite representatives of the local population to our monthly meetings. We also receive monthly reports from the Army. These reports publish, for example, information on leaking munitions that are stored here. Incidents of leaking munitions are also published. The private contractor operating the facility provides us with monthly reports. Various organizations provide us with independent gratuitous information support in

this matter. We have a Disease Control Center that provides us with necessary information. Our research committee also provides information upon request. Public Health officials visit this facility and provide us with information as required. I feel it is very important to inform you that none of these independent agencies or entities is connected or reports to the Army.

Today, after getting off the buses, we had an opportunity to meet some of your representatives. We realized that you experience the same hardships with Army representatives that we face. We would like to say that the Army was not always honest with us. In 1950, there were cases of agent release resulting from nuclear releases in our state. The Army representatives told us that nothing negative had happened, and they continued to deny it. It took us many years to get honest answers to our direct questions. For example, in 1960, the Army conducted tests of nerve agents, killing thousands of sheep in our area. When we asked the Army what had happened to the animals, the answer was that the sheep had eaten some grass and died as a result. We understand that the Fifties and Sixties differ from the current situation. I remind that your Army representatives were not too happy when you discovered facts you were not supposed to know. Our Army wasn't pleased either when the public raised the same questions. Naturally, if our Army gave us a direct answer, your Army must give you a direct answer as well. Therefore, I feel very confident now.

I see a lot of people my age in the audience and I think that you were put in the same situation as I was, i.e. you thought of our country as your enemy. I am very happy that those days have passed, and we don't have to deal with those problems any more. Time shows how much life and perceptions change.

I understand our countries have established open relations. Due to these open relations I think we are able to say: welcome to our life. This open policy has put the minds of US residents at ease, and our Army is more open. In fact, the Army sometimes reveals more than we wanted to know.

I would also like to say that we have great trust in the private company involved in the facility operation. I must say that I sleep well at night knowing that the facility operation is in good hands. And when asked what I think about living next to such facility, I respond that it would be better to paraphrase the question: what do I think about living next to 43% of the US CW inventory? Then, my response is: I feel a bit nervous because we still have to store these weapons. However, I am much less concerned about the facility operation and about getting rid of these useless stockpiles. The facility proved to be safe, and with the existing monitoring system, we know that no poison or gas will be released to the environment, and besides, our stacks don't release anything into the atmosphere. I am pretty sure that the facility is safe. However, that being said, I don't want anyone to ship their CW stockpiles to our facility since we are glad to get rid of our stockpile ourselves.

I value very highly the possibility of expressing my viewpoint on this problem. I will answer your questions with pleasure after my presentation. I will also be happy to speak with anyone who is interested in talking to me.

Gary Griffith

First of all, I would like to thank all people who made my trip to Russia pleasant and unforgettable.

Your hospitality is similar to the kindness shown to members of your delegation during their trip to our country. A few minutes ago, I thought that no one knew how important it is to have a speaker from Tooele. David Ostler talked a lot about the importance of working on the problems related to our area's facility. I am not that much different from you. The people sitting in this hall could easily be my neighbors, my friends, my relatives from Tooele who have the same concerns I have. Several years ago, we moved on from this stage to another. I would like to tell you about my experience with the concerns, irritation, or fear you feel. You already know that our chemical weapons have been stockpiled for more than 40 years, and we currently have a facility where CW are being destroyed using incineration technology.

My wife, her parents, my parents, and I have lived all our lives in Tooele. My 5 kids and 13 grandchildren have lived most of their lives in this area, too. I was immediately concerned when the problem of this type of facility operation was raised. This small town where I grew up and lived is 7 miles away from Tooele. Therefore, I clearly understand what life in a small town means. At present, I am the elected Chairman of the Commission in Tooele and member of the Resident's Advisory Committee appointed by the Utah's Governor. I have been a businessman for the last 40 years. That's how I understand your concerns.

I would like to focus on the problems we had in relation to construction and start-up of the CWDF. First of all, my family was very concerned as we lived in the vicinity of the storage area. Our officials have realized that two problems need to be addressed if you want the project to be a success. Interaction is the most important. You will face situations when you will have to compromise. I am addressing people who will bear the same responsibility I bear now. Acting as representatives of the population, you have to start negotiating and interacting with various agencies right away, if you haven't done it yet. You have to start today. I suggest you do it the same way and use the same methods we used. Your first task is to initiate a dialogue with the people who will be involved in the implementation of this project and to develop bilateral interaction with them. Your second task is to find out whom they report to and to interact with these bodies as well. In our case, it is state, city, and even the US Congress. You have to make sure that you establish relations with all participants in this project. First of all, they have to understand who you are. We tried to explain the basis for our requirements and told them that we would inform their management about their refusal to answer our questions and to report to our level. As soon as we established this bilateral interaction, they listened to us with attention, although I can't say that we always received what we wanted. You will have to compromise, too. Sometimes we suffered from insufficient funding appropriated by the US Congress. We tried to explain to the Congress that this is not a local, but a national problem and that the representatives of the area are impacted by the situation. At certain points, we had to move forward despite all the obstacles. You might face situations when you will have to compromise. However, there is one problem not open to compromise. Safety of the

facility operation is the top priority, and we were not expected to compromise on this issue. The facility can be safe only to a certain degree; therefore you are at risk under any circumstances. However, there should be a minimum risk for both the facility personnel and the local population. We want to run minimum risk. We have to realize that even minimum risk can lead to an accident. Despite minimum risk, it is necessary to have a powerful response system should any accident occur. There were no objections to this requirement. After we had these two conditions in place, we realized that it was time to start implementing the CWD project. Our intent was to have no one suffer.

Dave Ostler

We want these munitions to disappear from our life. We stockpiled them for 40 years and didn't have any idea about them. Many people are still working next to them. Based on the US laws, we cannot transport them to another area. Therefore, our main goal is to destroy them once and for all. And one more thing in summary, I would like to mention the responsible organizations: they must be supported because they make sure that the process is organized correctly from the very beginning. I would like to say: "Let's start the work! Good luck!"

Porvatova, N.P., Head of the Central Regional Hospital (town of Shchuch'ye)

ABOUT SOCIAL SUPPORT AND COMPENSATION FOR PEOPLE LIVING IN THE REGION AT RISK

I am a doctor and I want to say that I am not against chemical weapons demilitarization. Nevertheless, I would like to say the following.

After reviewing the information, I have come to the understanding that we are not ready for CW demilitarization either from an economic or legislative standpoint. We have no proved methods to process CA in the area with the population density of 14.1 person/m^2.

Intoxication with a low dose of OCA can cause respiratory diseases (bronchitis, bronchial asthma), eczema, mental diseases, and neuroses (according to the magazine «For Chemical Safety»).

Given the deficiencies in our hospital's equipment, we are unable to guarantee a correct diagnosis after observation of a patient. Therefore, I maintain that we must upgrade our hospital equipment before the beginning of the chemical weapons demilitarization project. The social anxiety is very high and people make it to our hospital only once a week when suffering from a serious or extreme case disease.

I think that the discussions about the construction of the CW demilitarization facility can be continued only once a law protecting everybody working and living in this region is passed.

I want to be sure that the CW from other places will not be processed in our region. The state must give those who want to leave here the choice to do so, including

ensuring an alternate dwelling. When these demands are satisfied, then we can continue our discussions about CW demilitarization and the construction of a special chemical facility.

Kolodkin, V.M., - Director of the Institute for Research on Natural and Technogenic Catastrophes

PRELIMINARY RISK ASSESSMENT CONNECTED TO THE STORAGE AND CHEMICAL WEAPONS DESTRUCTION IN SHCHUCH'YE AREA, KURGAN REGION

(Text of the report presented in Kurgan, 07.08.97)

Eschenko, Yu.I., Chief Deputy Engineer of JSS «GIPROSINTEZ»

DESCRIPTION OF THE CWD PROCESS AT SHCHUCH'YE FACILITY, KURGAN REGION

Dear residents and foreign guests!

I want to exercise my rights and tell you just a few words, because of Mr. Vasiluk's very long report. I hope to take about five minutes.

The general problems that seriously affect not only the population, but the project designers, and the scientists too, are work safety and environment control. You have just heard speeches from our US friends who gave estimations of the safety conditions and proper operation of the CW demilitarization facility. Professor Lev Feodorov and Mr. Vasiluk gave all kinds of details in their speeches on our «investments foundations» and declared that there is no real technology and that it is necessary to stop work, etc. I am not going to get into arguments and try to convince you that this is not so. But I will compare the general technological manifestations of the US facility (which is built and works successfully) to our main technological solutions. You will see how we can bring the potentially hazardous technology to the process with a high degree of safety.

The main operations. Receiving and storage of munitions.

With the US system, munitions are received in wooden boxes. According to our production process, the munitions are stored and received in sealed containers which do not allow for the risk of poisoning in case of seal leakage. In comparison, on this point, our technology is safer.

Our munitions do not require the drain stage, which the US technology does. Nevertheless, they have been safely working with explosives. We have no drain stage and therefore any related hazards do not exist.

Next comes the drain process. How does the process of chemical agent drain from shells proceed in accordance with our technology? A hole, 20 mm in diameter is drilled, then a drain head is inserted into the hole and the CA exits through a short (4-5 m) pipeline and immediately enters into the layer of the reagent. The reactor, which has

already been filled with the reactant, collects the CA from one type of munitions. The CA has practically no contact with the air of the production room. The only possibility of contact occurs during the short period of time when the shell moves from the drilling position to the demilitarization position. That is all. After this, the CA enters the reactor the reaction begins. Our process does not stipulate uncontained CAs. In US demilitarization technology, only one type of ammunition is used - missiles. They simply puncture them and the CA passes through a pipeline and is then supplied by a pump into the intermediate vessel. For shells they use another method of CA drain, where the burster well is first removed, then taken aside for a while, while the siphon is inserted into the shell and its content is drained. That is, there is a contact of CA with the production area atmosphere.

And then there's the main operation - the CA incineration. It is necessary to store some amount of the CA for supply to the incinerator. Since the supply of CA to the incinerator is conducted under pressure, there is a hazard. The CA incineration occurs in burning gases at a temperature of 800-1000^{o}C, during a time period of 2-3 seconds. The volumes of the incinerator and the gas treatment system are large and therefore the probability of CA pass-over is rather high in the case of upset.

These points characterize the general differences between our technologies. But note that the US did build this potentially hazardous enterprise, and it works successfully, while residents live in its vicinity without any trouble.

There is no doubt that that we are able to build a similarly safe facility. During our last session we were asked about guarantees. Our guarantees are based on our experience and the high qualifications of GIPROSINTEZ experts and because, in addition, we have designed the CW production facilities and we have much experience with related safety provisions.

Polozov, V.C., Regional Assembly Deputy

THE REGIONAL ASSEMBLY DEPUTY'S POINT OF VIEW CONCERNING THE PROBLEMS OF THE CHEMICAL WEAPONS DEMILITARIZATION FACILITY

Dear friends!

The reactions of the residents of Shchuch'ye to the problems discussed here are not simple. They could not be simple, because most of the people have no truthful information about the CW storage area and the work that is done there. Why do I say this? The lack of information can be easily explained. I think that it's because of serious weaknesses in social organizations and the poverty of people which makes it impossible for them to pay for radio and newspapers. Therefore, I think that that the Administration of the region must support the regional newspaper. The best would be to add an insert to our newspaper. This is one point.

The second point. I should like people to have the possibility to become acquainted with the normative documents of the State Duma, the Government, the Area and Regional Administration. They have no such possibility now.

The next point. It would be good to have the information from the reports of people that have inspected various other regions, to gain from their experience and to try and implement it here.

We were rather pleased when we heard about benefits for Shchuch'ye Area, if we approve the facility construction. I must say that the deputies of Area and town assemblies have not given this approval yet. The first point of the July 27th statement states: «Demand the adoption by the State Duma and the Federation Council deputies the RF law regarding social protection and entitlements for population residing in CW storage and demilitarization areas».

And the last point I would like to make is directed at the regional assembly of deputies, and the Administration of the region. The final decision about the chemical weapons demilitarization facility construction must be made after careful and detailed analysis of the «Justification of Investments» project, the technology for chemical weapons demilitarization and the adoption of the corresponding documents.

We met several times but with no results. Nobody tells us when the population health analysis is supposed to begin, and when the water and air pollution analysis for Shchuch'ye Area will be carried out. And what about Chelyabinsk? It continues to supply us with «green rain» once a month. Soon this will probably occur once a week.

Keeping in the mind that representatives from our industrial enterprises administration are present here, I would like to say that the new facility will create at least 1000 new employment opportunities. This means that the best workers will go there and the agricultural sector will then lack workers. If the Administration of the region does not take measures, the best manpower will flow from the poorer industries to the new types of enterprises. I think that we have to prepare personnel for the new enterprises in advance.

The foreign investments in the CWDF lead me to believe that once the facility is built, the social infrastructure of Shchuch'ye Area will be forgotten. This fact affects not only me, but the whole population of the region.

I wish to at least see a slower approach in this direction. We always talk about the means for individual protection that have to be moved from Kurtamysh to the population of Shchuch'ye Area. But nothing moves. Much has been said about the new laboratory, but we are still using the obsolete VPKhR [chemical detector] (which has been used for more than 30 years). Mr. Demiduk V.V. has informed me about the new generation of these devices and I believe we must have them here, near the armory.

Zakharov, A.N., Chief of Regional Assembly Deputies in Shchuch'ye Area

SOCIAL GUARANTEES FOR THE POPULATION - ONE OF THE FACTORS IN THE DECISION OF THE CHEMICAL WEAPONS DEMILITARIZATION FACILITY CONSTRUCTION

Friends, I would like to say a few words. The people sitting here are guests. I address a question to Mr. Baranovsky.- the GREEN CROSS co-chairman. Did you notice how many people came yesterday to the Shchuch'ye Hearings? And how many

people we have today, at the Kurgan Hearings? Whose problems are we going to solve? Chelyabinsk's problems? The Chelyabinsk residents do not have these weapons stockpiled near their homes.

It would be pleasant to see a practical solution to the problem. We have to solve the problem of the facility construction. A conference is needed here, but not in Kurgan (tomorrow). We must not waste any time. Our people must come to the understanding that we have to build this facility. During Soviet times, the State created a landfill here. When I suggested that all this weapons should be removed the answer was, that nobody wants to take it. I think, Kizner residents did the right thing. The Udmurt Republic Government is trying to help the people who guard and store these weapons. We are a poor republic. You know that the teachers and doctors have not been paid their wages for several months. The therapist has gone to work as a loader at the bakery. The possibility now exists that we will return to state budget payments. This could give us the possibility to pay salaries, and then our people will not starve and will acquire the proposed technology. That can really work.

There is a mobile CWD unit. But they are proposing to build an enterprise providing bituminous mass formation at the second stage and not incineration.

Everybody must understand that nobody is going to remove this landfill. Are you so sure that such a possibility will exist in the future? Don't you remember what we've been promised since 1985? Every technical expert has been trying to prove the reliability of his technology, but none of the experts have said that better technology exists elsewhere.

I stand for the CW demilitarization facility. Before this, I was completely against this construction. But there is the issue of the Convention, in accordance with which we have to demilitarize the chemical weapons in a 10-year period. What will be next? Again the Komsomol rush? And nevertheless we must destroy the chemical weapons. There have been a lot of disagreements, talks and hysterics, but the main point we made to the State Duma was that careful surveys and analyses must be conducted at the place selected for the CWDF. Once the area is studied and the feasibility study is conducted, then we shall speak to the people. Prior to this, our newspaper «ZVEZDA» must prepare public opinion. And only after this can we give the «carte blanche». That's it.

It does not mean of course that we have agreed to build the facility. I think that kindergartens with swimming pools are luxuries, but gas, electricity water, and roads are musts (we chopped all our woods!). The communication infrastructure is a first necessity, not swimming pools.

This is not the last conference, and so let the next conference be here and not in Kurgan, since more than one half of those present here are guests and not Kurgan residents.

Petrosyan, V.S., Moscow State University, Faculty Head

REGARDING ENVIRONMENTAL EDUCATION OF SHCHUCH'YE AREA POPULATION

Dear residents of the Kurgan Region, residents of Shchuch'ye Area, and adjacent regions.

I want to say that I completely agree with those who spoke about the environmental and social protection of people living in this area. However, I would like to focus on the information. I completely support the proposal to write an environmental page about the current situation in the region and CWD problems.

Besides, keeping in mind that the Deputy Head of the area administration and of the Shchuch'ye and Shumikha headquarters is present here today, I would like to tell you that I organized a program called the "Open Environmental University" seven years ago through the MGU (Moscow State University).

Both young and old attend this program to learn more about the environment and about its influence on people's health. Therefore I offer to organize this same program here in Shchuch'ye Area, Shumikha Area, and other places just like our US colleagues do wherever CW are stored. In these programs, the residents could learn about the environmental situation in the region and the problems caused by the CWD complex. Please believe me when I say that contact with various people is required. There is a lot of us who are eager to disseminate accurate information concerning the environment pollution and its influence on our children's health.

This is absolutely necessary because numerous "visitors" (to whom I could relate) pass out information as well, yet you have to make sure you are acquiring the most accurate information possible. Today we heard that "*the environmental capacity of the region is overfilled and one extra drop and...."* Excuse me, but it is absolutely ignorant to say so. There is no such thing as the "environmental capacity" of a region or area. There is certainly a concept of maximum permissible concentration (MPC) of toxic substances. There is also the concept of harmful effects of these substances. But there is no "environmental capacity."

The regional and the area environment control committees must watch these indices and provide accurate weekly and monthly information about the presence of harmful substances in the atmosphere and in the water and let people know the potential hazards. I think that the plant we discussed here must be built. This will permit your children and grandchildren to live without fear of any environmental catastrophe.

Mamontov, U.I., Head of the Rehabilitation Department, the Kurgan Administration

CHEMICAL WEAPONS DEMILITARIZATION IS BETTER THAN STORAGE

Dear residents of Shchuch'ye Area!

First, I must point out that we do understand that people in Shchuch'ye Area are concerned not only with their own problems but the problems of the residents of five other regions where CW are stored.

The position of the Administration is that storing CW is more hazardous than disposing of them. My viewpoint is similar.

CWD must be absolutely safe and conducted with provisions for the social protection of residents living in that region.

I was asked why I am not speaking today. I have written much in the press and spoken before audiences in various auditoriums, and therefore I think I've said enough.

Kalinina, N.I., State Duma, Defense Committee

SOME PROBLEMS ASSOCIATED WITH CHEMICAL WEAPONS DEMILITARIZATION LEGISLATION

I have extensive experience working with the State Duma as an advisor to the Defense Committee where I worked with the RF laws regarding demilitarization problems and the non-proliferation of mass-destruction weapons.

You know that the law concerning the disposal of chemical weapons was adopted. If you are not aware of this, let me give you a brief summary. It was developed by the presidential Committee for Chemical and Biological Weapons Problems. This committee was formed as a functional body for providing the conditions on which to base a chemical weapons ban convention. Our country signed this convention in 1993 together with most other countries of the world. As a whole, the convention took 20 years to design; our country took part in the for more than 10 years. It was not an easy task for the world's nations to adopt this convention. In 1972, the biological weapons ban convention was signed by the Soviet Union. One year later, our country declared that all biological weapons reserves were done away with.

The chemical weapons problem is more difficult, though. It is particularly difficult because their disposal is more complex and expensive than their production. That's why passing the law for chemical weapons disposal through the Duma was such an arduous task. Of course, the law does not meet everybody's needs. And of course, it is not comprehensive. This is, after all, the first law of its kind.

When the law was being considered in the Federal assembly chamber, there were a number of regions and RF subjects who expressed their wishes to include: the list of social privileges, the list and amounts of compensations, the actual figures, the appearance of the protective zone, and what people obtained from supporting this law. If it passed, we are going to get a number codes rather than an actual law, which would be even more difficult to adopt. For more than two years, we worked with this law. We came to the understanding of what the first law must contain, the law that regulates the legislation and the possibility of chemical weapons demilitarization. I hope that every

aspect of the law be written by the residents of your region (in the form of the brochure with the law's interpretation).

When the law came into force, it is fair to demand and put pressure on those in power to speed up implementation of laws on social guarantees and compensation. These laws could not be adopted before the baseline law. But after the adoption of the baseline law the implementation of the socially oriented laws can be sped up

Baranovsky, S.I., Russian Green Cross Vice President

GOALS OF THE THIRD PUBLIC HEARINGS ON THE SHCHUCH'YE CWDF

It is time to finish today's Hearings. Everyone heard some new information and therefore, I think, these Hearings have been useful. The main goal of the Hearings was to meet with people whom we succeeded in bringing here. The Hearing is a form of a dialogue which brings us a bit nearer to a resolution of the problem. We shall continue this work. The experts who came here will answer your questions concerning design, technology, medicine and other of the CWDF aspects.

Natalya Ivanovna Kalinina talked about the brochure she has written. Two brochures were edited by the Green Cross for the population of Shchuch'ye Area and will be delivered not only to Shchuch'ye but to the Shumikha region and others, as I promised the Administration. Also, with US support we have organized an information center in the building of the Administration.

We are trying to do our best to fill the information vacuum. In addition to the production supplied by the GREEN CROSS, there will be copies of the "Justification of Investments" discussed often today. It is worth reading, but more importantly, it must be carefully studied not only by the representatives of the administration but by you, the public. Please come visit the information center; it is open everyday, just as the newspaper says. A similar center operates in the town of Kurgan for area residents; get the information and think about it. You have to make the decision.

Thank you for spending the whole day here and listening to our arguments. I can assure that it was not easy to organize these Hearings and bring together these unique people. I would like to thank all who came here from Moscow and other cities. I want to express my thanks to our US and Swiss friends who came here to tell us about their work. And lastly:

I want to thank the people who organized these Hearings. These common people from the GREEN CROSS worked for half a year, and they have not slept for the last several days. Therefore, I thank everybody. These will not be the last Hearings. I hope that the decision to begin the plan will be adopted. The GREEN CROSS is ready to gather people here again for resolution of the next stage, that is, if these Hearings are useful we are ready to hold them again.

Sidorov, V.A., Head of Administration of Shchuch'ye Area of Kurgan Region

IMPORTANCE OF PUBLIC HEARINGS FOR CHEMICAL WEAPONS DEMILITARIZATION PREPARATION

Dear people of Shchuch'ye!

Welcome to the second day of Hearings. Tomorrow, the Shchuch'ye delegation will continue with the third day of Hearings. I am very pleased that the Chemical weapons demilitarization Hearings are being held here in Shchuch'ye where most of the work is planned to be carried out. We wanted to bring the participants of the Hearings to Chumlyak or Bieloyarka, but now I see that the Hearings in Shchuch'ye are sufficient.

I thank you for your contribution. We have to continue working in this spirit. We have carefully examined all the details of this current problem; about 30 thousand people stand behind us. There is no other way to go about this but to include everyone. I express my gratitude to everyone here. Social programs are of the utmost importance to us. We need guarantees. I ask you, Sergey Igorevitch, let the GREEN CROSS focus more on Shchuch'ye. It is a unique region, and I think that you understand this. Mr. Igorevitch, as you can tell, there are wise and educated people here today.

We are so grateful for your help in sending 30 children to the Vladimir area in August. However, we hope for more aid to be given to Shchuch'ye Area.

Weapons must undergo demilitarization. The risk is always there that this may pose some hazard to us; however, there is no choice in the matter as we cannot leave these weapons for our children to contend with.

Petrov, V.G., Desiatnikov, A.T., Kolodkin, V.M., Gabrichidze, T.G., Basharov, P.A.,
Institute of Applied Mechanics, Ural Department of Russian Academy of Sciences,
Udmurt "Union For Chemical Safety" Division

AUTOMATED SYSTEM FOR THE POPULATION WARNING AND EVACUATION IN EMERGENCY SITUATIONS AT CHEMICAL WEAPONS STORAGE AND DEMILITARIZATION AND OTHER HIGH HAZARD FACILITIES

The main protective measure for the Udmurt Republic population in the case of emergency situations at the CW storage facilities is evacuation. The number of losses depends upon the speed of this evacuation after the emergency situation. The existing Civil Defense (CD) system has a number of consistent shortcomings caused by the complexity of assessing the situation and ascertaining the best emergency action. These stipulate the difficulty of rapid and rational population evacuation during the emergency situation.

The CD automated system at the facilities for CW storage and demilitarization (and other high-hazard facilities) is under design now. This system must minimize the time

required for situation assessment and facilitate the process of rapid measures for population warning and evacuation.

The principle of the automated system operation is as follows: a signal with preliminary initial data (cause of emergency, power of explosion, type of damage, etc.) is supplied after the emergency situation occurs at the facility. The weather report is requested, then using computational and geoinformational systems the situation is determined. Basic mathematical simulations are used for these calculations. With this assessment the decision is made, and then the system proposes the best plan for population evacuation. The system provides the first possible necessary measures and further measures. Then automatic warning of the population is conducted with the use of modem and telephone communications. As new information is obtained by the situation assessment system, the evacuation measures are updated and/or altered as the population is being evacuated.

The computerized system conducts situation analysis within several minutes. The warning and notice to evacuate is also provided by modem and telephone communications. Sirens are also used. The system is rather compact and is controlled by only one service operator. The system is aimed for utilization at CWD facilities and other high-risk facilities in the CD and emergency situation services. It is designed for large-scale emergency situations that cause population evacuation. The system must be located outside the facility in order to prevent injury to the personnel and damage to the system.

Chemical pollution sensors are not compulsory for this system. The main requirement for proper system operation is the ability to obtain initial data about the emergency situation using various sources, e.g. visual control.

The approximate cost of such a system, with equipment for warning the social buildings (hospitals, schools, etc.), is about 1.5 billion rubles, consistently less than the cost of a warning system where signals supplied by chemical contamination sensors are used as the basic data. The system takes one year be set up for use.

Besides its main purpose this system can be used for the training of CD and emergency situation services staff and personnel and of the population.

THE PRINCIPLE OF AUTOMATED SYSTEM (AS) OPERATION

1 - emergency situation at the high-risk facility;
2 - initial data signal;
3 - weather report;
4 - assessment of the situation with the use of VS and GIS,
5 - AS adoption of population evacuation,
6 - AS selection of best evacuation plan,
7 - communication means;
8 - warning of population in accordance with selected plan of evacuation;
9 - information and control of rapid deployment services for population evacuation in accordance with the plan selected;

10 - population evacuation in accordance with the selected plan;
11 - AS correction of actions on the supplied information basis.

Aslanyan, L.V., Deputy Head of the Federal Department for Medical, Biological and Extreme Problems at the Health Ministry

MEDICAL AND SANITARY CWDF PERSONNEL SUPPORT

Summary: Medical and sanitary provisions of CW production, as well as approaches and measures for their organization during CWD, are described in this report.

The convention of CW design, accumulation, utilization and abolition and demilitarization says that the each state participating in CWD must focus on environmental pollution control and public safety provisions.

To solve this problem it is necessary to estimate and use the scientific and practical experience of CW medical and sanitary production provisions.

In our country, a specialized medical and sanitary service was formed for CW design and production. This system included:

- the (former) Third Main Department of the USSR Health Care Ministry;
- medical and sanitary departments of this department;
- medical research institutes.

The characteristic feature of this system was the proximity of medical assistance to production, the connection of the Main department with medical subdivisions, enterprises, research institutes and branch ministries which provided operative control of the situation.

The medical subdivisions were organized at the facilities and had all the required medical and sanitary aid (policlinics, stationary hospital, State Epidemiological supervision, VTEK and others.

Finding a solution to the toxicology, sanitation, clinics, diagnostics, medical treatment and rehabilitation problems necessitated two Ministry of Health scientific research institutes. The clinical departments of these institutes were formed as medical divisions.

To strengthen the medical divisions for emergency cases, the special clinic-toxicological and sanitary teams were formed. At these institutes medical personnel training was conducted.

The Institute of Qualification Promotion is formed in the Federal department, and various faculties are formed, accounting for specific work conditions of the Federal Department medical services.

Professional Diseases, Preventives and Environment Pollution Control gave responsibility for the principle of safe working and facility operating conditions to the Main department and its enforcement to the State sanitary supervision department (GOSSANNADZOR) and medical divisions.

This system developed scientific, yet practical medical treatment, and all industries required normative documentation to achieve better labor conditions, to decrease the incidences of toxic-agent poisoning when CA production is discontinued.

The Decree of the RF President and the statements of the RF Government entrusted the Federal Medicobiological and Extreme Problems Department ("Medbio-extreme") at the Russian Ministry of Health with the CWD medical sanitary provision.

The Federal Department also accumulated data during the last ten years, determining the sanitation level of the CWDF's activities near the town of Chapayevsk.

Using its findings the Federal Department has formulated the assignments and CWD principles of scientific and practical medical and sanitary provisions.

The Federal Department :

- Developed sanitary/hygienic requirements for the arrangement, design and operation of CWD facilities;
- Designed a set of hygienic standards for demilitarized substances;
- Designed the proposed solutions for the design of the proposed project about policlinic consultative-diagnostics centers, health-protection stations and industrial-sanitation laboratories, the laboratory equipment and laboratory personnel lists;
- Conducted sanitation studies and developed the conclusions of GOSSANTEHNADZOR (The National Sanitary Supervision Committee for the design materials of demilitarization terminals in Kambarka and Gorny)
- Studied the experimental-industrial CWDF in Gorny;
- Substantiated investments into the facility construction in Shchuch'ye;
- Determined and approved CWDF medical facilities and walk-in clinics;
- Reviewed the training programs from the Federal Department and territorial services of medical treatment, Sanitary and Epidemiological Supervision Committee and others.

The accumulated data is used for the drafting of federal laws, for programs and other documents for CWD and for the evaluation and selection of demilitarization technologies and sanitation data of design materials for CWD.

The Russian Health Ministry Board, together with representatives of various ministries and regions, had discussed the realization of CWD problems entrusted to the Health

Ministry and the Federal Department. The Board determined the list of measures to be realized during the preparation period. The Board marked up unsatisfactory financing of scientific and practical work.

The Federal Department acknowledges that the public Hearings initiated by the GREEN CROSS could serve as professional discussions of public safety provisions and environmental pollution control during CWD in Russia.

Antipova, N.D., Ministry of Health, Deputy Head of Department for Expertise and the State Inspection for Sanitary - Epidemiology-Oriented Programs

ORGANIZATION OF STUDY OF HEALTH STATUS OF POPULATION LIVING IN TERRITORIES AROUND CHEMICAL WEAPONS STORAGE AND DEMILITARIZATION AND MONITORING THEIR DISEASE RATE

Summary: This report covers the population health condition, the detection of causes and effects, and health monitoring.

In accordance with Russian Federation statements from December 30, 1994 No. 1470 and from March 22, 1995 No. 289, the study of population health is conducted in the zone of a possible CWDF construction in the Saratov Region (Gorny) and the Udmurt Republic (Kambarka and Kizner).

The goal of this study is to estimate the impact of CWD facilities on human health.

The health study is very important and must be precise, therefore it must be conducted with special care, and the complex structure of contributing factors must be able to be recognized and understood. The study should be conducted in accordance with the designated method. In this study, the accounting of individual residents in the zone is necessary for obtaining accurate information.

The main goal of the Health Ministry of Russia is the complete protection of the communities from potential impact caused by the contaminated environment. Now, under National Action Plan For Environmental Hygiene new technologies for estimating the influence of the environment on health were designed. Modern systems for obtaining information on the population’s health and environment were designed, too.

The main concern behind this strategy is that chemical agents are permanently present in the environment, providing a degree of risk which is always higher than zero.

The key concept is the public’s protection from the inevitable risk of toxic substances in the water, air, and soil. Due to this approach the comprehensive risk estimation becomes critical regardless of the source

If risk analysis obtains a well-defined correlation between some definite concentration of toxic substances and the probability of a negative effect on public health, then risk control deals with the analysis of risk minimization alternatives.

In 1995-1996, the Center of Preparation and Realization of International Projects estimated that 31 Russian informational systems provided collection, storage, processing and analysis of data concerning the state of the environment and the health of the population.

The list of indicators from the list of environmental and public health parameters was compiled (in accordance with World Public Health Organization recommendations).

The public health studies that are conducted in the regions of CW storage and destruction now suffer methodically and are provided without extensive research on toxicology, the clinical effects of these substances and some other compulsory components required for these studies' conduction.

Analyzing the reasons for this situation, the Russian Ministry of Health recognizes that this sort of study must be conducted under the methodical supervision of Russian Ministry of Health and the leading scientific-research institutes of the Republic. These organizations have licenses and well-trained, experienced personnel.

The problem of using a single method for studying unfavorable environmental factors on public health is also discussed in the report. This method must be adapted to real situations and describe the specifics of the CWD facilities. New achievements for obtaining accurate results could allow a determination of the influence of the facilities on the health of the population living in the at-risk region.

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PROGRAMS BY MEDICAL ORGANIZATIONS FOR PUBLIC HEALTH PERSONNEL TRAINING IN REGIONS OF CHEMICAL WEAPONS DEMILITARIZATION

The enrichment of doctors' expertise at area public health organizations is one of the elements for medico-biological safety in CWD regions. It is clear that these facilities are potentially hazardous for human health and the environment. Specialists know that there is no technology without waste.

Despite severe control with many strict environmental criteria it is impossible to protect the environment completely. Water and air pollution occurs (or can occur) at different points in production.

CWD technology based on neutralization is acquiring more and more supporters, but the formation of substantial amounts of solid waste and of minute traces of toxic substances in the reaction masses relate to the method's shortcomings.

We cannot exclude the emergency cases during which the population can be affected by chemicals. The causes may differ, and the results and probability of such situations occurring may be minimized. But it is always necessary to be ready for the corresponding action. The role of medical services in this plan is very important. The training program for doctors within the framework of the "CHENTRUST-8" project of the Russian Green Cross, "Medical and environmental safety in the regions of CW storage and demilitarization," pays special attention to medical protection from chemical hazards. This problem is real not only in Russia, but on the international level. During the training, the doctors will get practical and theoretical recommendations that have been developed within the framework of UNEP, WHO, ILO, IPCS, MRPTKhV and others. The main goal of the training program is teaching the doctors modern methods for chemical hazard identification both in the production process and in the environment; to teach them qualitative and quantitative assessment of hazard; to give them the toxicometry essentials; to give them criteria for detecting toxic substances' influence and health changes (caused by CWD facilities' effect in particular). I am talking about the skill of exposition testing, the evaluation of the degree of contamination (the level of water and air pollution), the detection of general and specific signs of toxic effect and also the ability to foresee long-term effects.

Organizations of practical medicine, medical institutes, and universities work hard in the Saratov area, the Udmurt Republic and the Kurgan Region on the problems of population health and environment pollution. Unfortunately, the obtained results are not always subjected to detailed analysis. Often these data are only superficially informative. I think that the following information should be provided to the doctors: environmental background and medical indices are required for the CWDF construction and initial operations. The level of information at the outset of this training program depends upon the medical staff's education and placement (walk-in clinic, hospital, sanitary supervision services, rapid deployment medical services).

Besides purely medical information (chronic intoxication signs, diagnostics, measures of extra medical aid, antidote therapy, etc.), doctors will get the analysis of myriad variations of emergency development to have the ability to properly assess the situation. They will receive recommendations for the organization of a medical survey during the post-emergency period.

The doctors will receive the necessary information concerning individual protection means, their properties and the conditions of the areas where they will be used (depending on the emergency situation). The doctors will be trained in the practical usage of individual protection means. They will be informed about possible negative effects of working in these protection means.

An important topic of the program is the chemophobia problem, a result of psychological stress. In the program, the reasons for its development and the negative medical and social effects will be discussed. Not only the neuro-psychological

disorders but also the aggravation of various diseases, especially those where the neurogenic factor plays the dominant role (cardio-vascular diseases, ulcer, etc.), are hazardous. There is data on the negative influence of stress immunity characteristics. The doctors, being a social group that has close contact with the population, can change the attitude of people towards the CWD problems.

In this situation, excessive medical details and unjustified correlations of a disease with a chemical cause must be considered careless mistakes by the doctor. Of course the opposite position — that is, a doctor's excessive optimism, suppression of any useful information for the public, a passive attitude toward the situation, and treatment of symptoms without looking for the greater cause in the patient or in the area environment — is also unacceptable. Local therapist may suspect this sort of diagnosis (not the acute cases, of course), but the final diagnosis comes from specialized clinics, physicians-specialists and pathologists.

It is useful to inform people in the accepted manner about the scientific and practical work conducted in Russia and internationally about the safety when working with toxic substances, materials and productions, about the role of sanitary norms and regulations, about the work of public health organizations. One must know that the internationally cooperative work in the area of extreme chemical hazards resulting from emergency situations has decreased their after-effects.

The Federal Program "1997-1998 Medical-Sanitary Support to Modern Development Stage of the Nuclear Power Complex and the Highly Hazardous Productions under the Conditions of Nuclear and Chemical demilitarization, Conversion, and New Technologies Design" was approved by the Russian Federation Government (No. 191) in February 1997.

The special program of the Health Ministry for doctors' medical and sanitary training in the places of CW storage and demilitarization is its constituent element.

We plan to inform the doctors of the historical stages of CW banning and liquidation, as well as national legislation. We also intend to inform them about the Convention and other international agreements, about the special inspection organization, about work of international organizations and the first-hand work of the Green Cross.

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POSSIBILITIES OF ASSIMILATION OF SHCHUCH'YE AREA IN CONNECTION WITH CHEMICAL WEAPONS DEMILITARIZATION PROBLEMS

Real achievements in demilitarization lead us to believe in the prevention of large-scale and global catastrophes that would bring immeasurable harm to all living things on the planet. All around the world demilitarization processes have been initiated. I see CWD

processes as timely and undeniably necessary. The biggest fear concerning CW is the result of their propagation, then penetration into active military zones or into the hands of terrorists. This fear is widespread.

The Convention banning CW serves as a normative base for regulation of all relations, processes as well as sanctions against Convention member-countries in the case of violation of these regulations.

The CWD project is oriented at global problems while the member-countries of the Convention have their own agendas, both military and political. Global public safety has irrevocable priority among the strategic goals of the project.

The CWD problem is complex. A few words about scientific, techno-economical, organizational, environmental-social, international-legislation, political and other plans:

The CWD problem relates to global dilemmas and consists of timely, environmentally-safe, socially-oriented, financially thrifty conduction of complex measures aimed at this project's realization. The unique nature of this project does not follow the usual route of using only the technological-technical approach. This project requires detailed study at the conceptual, design, organizational and management levels. We have to consider the degree of indeterminacy in the course of realizing demilitarization technology (in the stage of project operation) and possible (as yet undetermined) short- or long term after-effects due to the complexity of the environmental system and insufficient of knowledge of its functions. It is also necessary to keep in mind the social-psychological factor.

In addition to the social anxiety caused by long-term CW storage (focus of the public opinion) we should consider the tension arising in the course of CWD process. Anticipation of scenarios occurring during the realization of the project process is required, in addition to the identification of risk factors and the determination of the degree of risk. It useful to use the method of Prof. Kolodkin Vladimir Mikhailovitch (The Udmurt State University). With this foundation we must to design a system of insurance for and rehabilitation of the territories. We have to remember the profit loss of the agricultural industry and other industrial enterprises and the profit loss due to decreased business activity in the CWD zone.
We must rely on the following principles during this project:

I. Mandatory independent environmental evaluation of the project,
II. Open flow of information during preparation and realization of the project;
III. Response to the demands of the people living in the project zone, and preferential treatment for Kurgan Region residents in terms of economics and infrastructure;
IV. Assistance for Kurgan Region development programs based on the specifics of its nature and climate, history and national economy.

The participation of Kurgan Region in the process of project realization must not be limited passive observation of the processes in its area. On the contrary, Kurgan Region is the source of resources for project realization.

The main necessity for each project realization (including the CWD project) is the area's assimilation potential (AP).

The AP of an environment in a given area is the ability to dispose of and to process hazardous substances, and to neutralize various anthropogenic effects without any changes to its main attributes. The AP of a land parcel can be divided among buyers, much like the sale of subdivisions. Facilities and other enterprises can buy a percentage, or share, of the assimilation potential aimed to withstand their facility's operation waste and environmental effects. Several facilities can buy into the same division of land and share the assimilation potential. The AP has its own environmental estimation which allows the society to conduct various activities and reduce the cost of nature conservation and reconstruction. The economy considers AP as a resource that can be the obligatory component of any project. The owner has the right to use his amount of this resource to maximum profit. There is enough printed material in which specific values of the maximum permissible concentrations of various contaminants are listed. At these concentrations environmental systems preserve their properties, that is, the environmental equilibrium is not affected. These indices are objective attributes of environment, determining the force and direction of intensive anthropogenic effects on the environmental-economical system, similar to indices of soil fertility, quality of mineral resources, volume of water reserves, etc.

We see in some regions that the anthropogenic effect came close to being an environmental catastrophe. Society recognizes the objective facts of these limited cases, indicating that we need to limit the assimilation capacity of the area. The problem of its effective utilization appears. With this recognition the economical evaluation of AP becomes an actual, socially valid problem.

One of the most frequently used indices for assimilation capacity estimation is the maximum permissible volume of waste (MPWV), differentiated into various contaminants and combinations. The MPWV values of some areas do not coincide, providing the basis for the differentiation of various regions' assimilation capacity. The idea is that the anthropogenic effect must not exceed the AP of the area. Since the AP is significant, it must be accounted for during production, realization of the project, etc. The utilization of the AP in commodity production or its involvement into various types of economic activity must be accompanied with determination of the AP price. The involvement of the AP into the project realization is possible if the owner of its area agrees.

It is possible to organize the buying of the AP of the area into shares, or if the AP owner participates in the project and profits as a result the project realization.

In accordance with the RF Constitution each person has the right to a favorable environment and compensation for any detriment to health, lifestyle or property.

The Constitution acquires general statements of the Federal agreement and determines the organizational-law for mutual relations of the Federation and the its

subjects. The Federation subjects have the right to control economic relations (including the adoption of laws and other regulation acts).

The losses caused by environment pollution are external (including those in the CWD project), because other negative results (including the economic strain) are being felt by the other managing subjects and population in the zone of contaminant action. Here, we see the necessity and justice of compensation payments for all AP owners of the area where the project is realized. In our case the project organizer who has interest in CWD must pay all types of losses (including profit) to organizations and Kurgan Region residents. To provide compensation it is necessary to create an organization having the respective authority to realize the project with the maximum economical effect for all project participants.

The characteristics of the social-economic situation in the Kurgan Region is considerable natural geography, climate and other reserves for utilization as a recreation zone for the development of health resorts, tourist and other types of business and for the development of medical technologies. Agriculture (the most promising type of production activity in the area) can be oriented to all types of recreational and healing business. The necessity of investments into agriculture is obvious. If the CWDF project will be included as the constituent part in the comprehensive program for using the Kurgan Region AP as the recreational zone, the results of the project could be achieved in the safest manner, accounting for the interests for all participants.

The recreation and health resort of Kurgan Region is to be used for rehabilitating residents subjected to the pathogenic effects in the areas where CW warehouses and other high-risk enterprises are located.

To realize these conditions it is required:

I. To form an organization of the corresponding organizational-law form, which would provide all the required and sufficient conditions for project realization;
II. To form the structure of the project management;
III. To organize realization of the project on the competitive base (concourse).

In so doing, the Administration of the Kurgan Region, the Defense Ministry of Russia, and the Green Cross have to work jointly. Numerous options of the main solution (to the CWD problem) must be discussed.

I want to point out that here was discussed the permanent decision about the CWDF construction. But notice, the main goal is not the construction of the facility but CWD.

The goals are substituted either purposely or due to insufficient study of the alternatives for CWD. In the future the excellence of the facility will become the agitating motive for its further utilization with various contaminants: pesticides, household and industrial waste, etc.

Therefore, we must demand to use for CWD the mobile installation that will be operated only until there are no more munitions. If there is no such a type of the facility, then it must be designed, transported and provided with the utility infrastructure.

For the CWD project realization, formation of a financial-investment fund (FIF) of the Kurgan Region was suggested. The FIF must be an independent, alternate budget fund. The Kurgan Region administration, the Kurgan department of the International Green Cross, the organization-project-organizer and others (including the foreign representatives) could become the fund's founders.

The main assignments and functions of FIF are:

1. The mobilization of finances for environment control realization, compensation for all types of losses and lost profit due to the project realization.
2. The determination of detrimental losses and the conduction of compensation payments.
3. The financing and the crediting of measures directed on the Kurgan Region assimilation capacity reconstruction and enhancement.
4. The provision of environmental safety and population rehabilitation of (for the area and regions).
5. The insurance of all types of business involved into high environmental hazard.

The sources for this project implementation are to be formed as follows:

I. The project organizer makes the payment into the fund account; the value of this payment must be equal to the cost of AP used during project realization.
II. The insurance payments and the compensation payments.
III. The Kurgan Administration participates in the project through giving some part of the area's AP (estimated by special method) to the project organizer.

The income of the fund can be drawn from federal budget finances destined for financing environmental control measures; from incomes due to allocation of sums on the bank accounts or on the accounts of other credit institutions; from finance-credit operations, hard currency and ruble incomes from foreign persons or legal entities; other financial sources.

The fund assets can be used for:

I. financing of construction and modernization of nature preservation facilities and recreation facilities using the properties of the Kurgan Region;
II. protection of public health from diseases;
III. the compensation and payments for health damage due to the influence of contaminants and payments for residents' migration due to water and air pollution;
IV. scientific-technical studies, designs, and assimilation of material, power-saving technologies and environmentally clean enterprises;
V. the finding of the development and operation of the monitoring system (monitoring of living conditions);

VI. the crediting of environmental measures provided by enterprises, institutions, etc.;
VII. the financing of measures for information accessibility to population.

If this fund is formed the supervisor of the project could be the RF Ministry of Defense.

All these would provide conditions favorable for accumulation of funds needed for project realization in the FIF's accounts, as well as openness of the work. It would eliminate bureaucratic delays and would solve the nominated assignments of the project.

In conclusion, I want to emphasize the following:

1. The situation in the Kurgan Region is very complicated. On one hand, there is permanent hazard due to CW armories, and on the other hand, the situation is favorable for investments in the field of environmental, social and economical problems.

2. The CWD must be considered as demilitarization, that is, having in mind the political aspect of the problem, we have to identify all the goals of a potential aggressor in the scope of CWD. This project must not be considered the philanthropy of a foreign investor who wishes to make the life of natives more safe and the state of the environment more clean.

3. The administration will participate in the project, and the demands of the regional population must be fully satisfied.

4. This project can be a preliminary case for making a transition to market methods using the AP of the area to bring in an additional flow of income (rent) to the budget.

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REQUIREMENTS FOR DOCUMENTATION ON POPULATION HEALTH CONDITIONS LIVING NEAR CW STORAGE AND DEMILITARIZATION FACILITIES

Community health is one of the most influential factors in adopting decisions on the need to improve the environment surrounding industrial plants or in planning new projects. At the same time, difficulties in obtaining reliable information on health and, especially, connections to the environment, leads more often than not to unfounded, speculative statements causing great harm not only to the regional industry and infrastructure development, but to the communities, whose anxiety about health may be

even more hazardous and harmful than environmental pollution. Publications of the past few years contain extensive new data on pernicious “effects” of CW storage and demilitarization facilities on community health, citing, nevertheless, no reliable or convincing facts to prove the assertion. Such unjustified statements are transferred to CWD projects under design, despite the fact that the documentation of the effect of current technologies and designs on the condition of community health.

To assess the state of community health, official statistical reports and data are commonly used, though in certain cases, the findings of special examinations of definite groups of the population (e.g. children) may be employed. In both cases, to evaluate such information it is necessary to use special additional data on the methods of information collection, on reports’ presentation and on random sampling rules used in population surveys, without which it is impossible to make definite conclusions about the effect of particular facilities on community health.

Official medical statistics on administrative areas are too extensive to judge the effects of comparatively small health facilities of nearby communities. The number of people living around CW storage and demilitarization facilities makes it impossible in most cases to assess the incidence rate of many diseases and requires special methods of data collection and evaluation.

CW storage and demilitarization facilities and planned CWD projects can be considered relatively small in size. They may bring about local environmental changes which can be assessed only on the basis of a specially compiled program with specific reference to possible effects of chemicals in storage or under demilitarization. The most preferable survey of the total population in the main and control areas uses the “pair copy” technique. Selection of a control area that corresponds to the main area — with not only climatic indicators, but also social, domestic, medical and others — presents, as in any epidemiological survey, certain difficulties.

Assessment of community health should take into account international requirements and include demographic information (number of residents, age and sex percentages, number of infants under one year of age, number of children from 1 to 14 years of age, number of adults, number of elderly persons, ethnic groups); health information (birth and mortality rates, perinatal and childhood mortality rates, abortion rate, frequency of medical care in case of certain illnesses, information on self-perception of sound health and welfare) data on population lifestyle (consumption of alcohol, smoking, drugs, nutrition, exercise, etc.); characteristics of housing and amenities (water supply, availability of centralized heating and sewerage systems; population density; number of persons in a single living space); social and economic conditions (education rate, employment rate, income level, crime and misdemeanor rates); culture (TV, theaters, accessibility of mass media, exhibits, museums, etc.); information on the environmental condition (quality of air and water determined by particular pollution levels, including pollution by toxic chemicals, noise, electromagnetic oscillations, radiation, rodents, insects); social inequality (number of people living below the poverty level; immigrants; minorities; the number of people who are mentally ill, illiterate, addicted to drugs or alcohol or homeless); physical and social structure (public and private transportation, means of communication, education, employment and work programs, unemployment

rate, financial support); medical services and monitoring (accessibility of medical services, hygiene awareness, rate of population inoculation, legislative acts limiting the sale of alcohol and tobacco, monitoring of air and water quality, etc.).

Many of the above-mentioned parameters are reflected in official statistics which should be applied to every populated area rather than generalized on the local scale. Many of the parameters need to be specified more accurately using task-oriented investigations or available research and development projects' data.

Completeness of information on the above-mentioned approaches covering both the main and control areas will determine reliability and conclusiveness of the adverse effects of the CWD facilities on community health.

Community responses to anthropogenic environmental pollution can be grouped into individual and collective. The former covers acute and chronic poisonings with chemical compounds. Poisoning is determined in individuals only by hospitals especially indicated by Federal managerial agencies or by special commissions after a thorough examination of sick persons under hospital conditions. Undoubtedly, under the normal operation of CW storage facilities and CWD facilities such cases cannot happen. Such illnesses can only appear as a result of emergencies with minimal probability of occurrence.

The long-term effect of a small concentration of chemical pollution brings about non-specific responses which can be assessed only through changes in the health of large population groups (work force group of population, communities in general). Such responses are simply incidental, dependent on various factors and can only be statistically evaluated. The selection of groups to assess the adverse effects of environmental factors and the selection of parameters to be studied should be confirmed by a special program approved by the customer. The program should provide for the formulation of major hypotheses and methods for proving them.

The Hill criteria (modified and amended by the present author, jointly with I.I. Baryshnikov) may be of great help in proving effects of adverse factors on human health:

- Observation in humans of effects seen with experimental data;
- Consistency of observed effects for different surveyed groups;
- Plausibility of these connections (Simple statistical associations without biological explanations should be discarded);
- Associations force (Control group indicators provide ever-increasing probability of significant differences: P0.01);
- Presence of a correlative degree between time and dose exposure, requiring elucidation of exact concentrations of pollutants in various locations;
- Increase in the incidence rate of non-specific illnesses among population groups of increased risk (smokers, elderly people, children, ill persons);
- Polymorphism of injuries due to chemical factor effects;
- Uniform clinical make-ups in affected persons;

- Confirmation of chemical compound effects by detecting the compound or its metabolites in tissues through biological media or specific allergological tests;
- Tendency of patient's condition to return to normal when an adverse factor has been removed.

Determining the validity of more than five of the above-listed signs makes the relationship between detected changes and environmental factors quite probable, and determining the validity of all seven signs proves this relationship. Current investigations require mandatory statistical processing of their findings, proof of the revealed distribution pattern, and in a number of cases, a multidimensional evaluation of the factors. Statistical processing of the findings should provide an assessment of "effect-response" (the number of persons featuring definite indicators) and "effect-reaction" (mean values of an indicator in different groups).

Medical mapping methods, having revealed illness distribution patterns for a particular area, make it possible to determine the source of environmental factors and to prove the effect of negative factors. The above-listed requirements for the assessment of environmental effects, along with the use of current investigation methods, are to be set forth by the Russian Green Cross both for completed and planned projects.

This will facilitate more constructive negotiations between the public and designers so as to avoid unnecessary conflicts and confrontation.

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CONCERNING COMMUNITY HEALTH IN SHCHUCH'YE: REFERENCE TO THE POPULATION MORTALITY RATE IN SHCHUCH'YE AREA OF KURGAN REGION FOR 1994-1996

The Population of Shchuch'ye Area is 29,700, including 10,800 persons residing in the central Shchuch'ye Area.

Medical care for the population is offered by the Central Area Hospital which has 200 beds, complete with a polyclinic capable of 450 visits per shift, and by three area hospitals located in:

- Kayasan, 20 beds/hospital;
- Chumlyak, 25 beds/hospital;
- Peschanka, 15 beds/hospital.

Medical aid is also rendered by 37 FAPs (medical assistant/obstetrician office) and FPs (medical assistant office), by an area Sanitary and Epidemiological Supervision Committee and a pharmacy.

Demographic situation in the area (accounting for 1,000 residents)

1. General mortality rate in the area decreased from 18.7 cases per 1,000 persons in 1994 (compared to 15.2% in the region) to 16.1 cases in 1996 (compared to 14.1% in the region).

2. Birth rate: 11.6% in 1994
   9.1% in 1995
   8.6% in 1996 (6.65 in the Region),
   tends to decrease and is now equal to the region's.

3. Infant mortality rate: 28.35 in 1994
   24.6% in 1995
   16.7% in 1996 (17.5% in the Region),
   dropped markedly in 1996.

4. Natural population growth rate: (-7.1%) in 1994
   (-9.3%) in 1995
   (-7.6%) in 1996,
   compared to 5.5% in the Region.

Natural growth of area's population is absent as in the larger region.

MORBIDITY RATE
for the adult population in Shchuch'ye Area of Kurgan Region
for 3 years (1954, 1995 and 1996)

The morbidity rate per 1,000 residents in the area increased by 71% on average from 699.9 to 978.9 cases. The general morbidity rate in Shchuch'ye Area is lower compared to regional figures (1,040 cases for rural areas).

Respiratory organ diseases (113.6 cases compared to 191 cases in the region) rank first in the causes of morbidity for the area's adult population. For the past three years, the level of this nosologic form of morbidity has been stagnant. As reported, cases of chronic diseases of the rhinopharynx grew from 0.8% in 1994 to 2.1% in 1996. The number of acute pneumonia cases remained the same. The morbidity rate of chromic bronchitis is on average 13.8-12.3%. Incidences of bronchial asthma shows no change, varying within 4.6 to 4.5%.

Morbidity due to respiratory organ diseases remains the primary cause at the regional level. A low level of chronic bronchitis cases is reported, despite a tendency to increase from 7.6 to 9.06.

Diseases of the nervous system and sensory organs rank second. The rate of these diseases' incidence has increased from 78 to 92.1. The figures are substantially higher than the region's which are at 65.5. An increase in the morbidity rate is due to psychic

disturbances (from 0.3 to 0.6) and morbidity of the peripheral nervous system (from 4.9 to 5.1).

Endemic diseases of the osteomuscular system and of joints and connective tissues come third. An increase from 62.2 to 91.8 is mainly due to more frequent incidence of systemic disease of connective tissues, reported from 4.7 to 5.2. The morbidity rate average is the regional level: 98.2.

The fourth most frequent cause of morbidity are blood circulation diseases whose level has increased from 68 to 89. Compared to regional figures, these numbers are lower, but are higher in the case of ischemic heart disease. Significant growth (from 0.76 to 1.12) was observed in such nosologic forms as myocardial infarction.

The fifth most frequent cause are psychic disorders which have increased from 51.9 to 62.4. The figure for the general area is at the regional level. Traumas and poisonings come in sixth at 72.8. For the past three years indicators have shown a decrease from 77.4 to 72.8, now at the regional level of 74.0.

A considerable increase in the incidence of skin and subcutaneous tissue diseases, from 15.3 to 57.9, has put them in seventh place which is higher than the respective regional indicators which vary within 41.3 to 46.1. Skin diseases mainly consist of dermatitises and eczemas.

Diseases of the endocrine system also show a tendency to increase, from 12.7 to 14.7, a figure which is lower compared to respective figures for rural areas of the region (18.0 to 21.0).

The growth in the types of endocrine system diseases is attributed to diabetes mellitus.

The levels of oncologic diseases in the area per 1,000 residents are as follows:

- 288.7 in 1994(region: 319.0);
- 296.2 in 1996 (region: 307.5), which is lower that the regional indicator.

Incidence of infectious and parasitic diseases increased in 1995 from 34.9 to 46.3, still lower than the regional figure: 51.9.

Mortality rate due to physiological age increased due to the following nosologic forms:

Tuberculosis: from 0.25 cases per 1,000 residents in 1994 to 0.61 cases per 1,000 residents in 1996.
Malignant growth diseases: from 2.78 cases per 1,000 residents in 1994 to 3.1 cases per 1,000 residents in 1996.
Chronic bronchitises: from 1.54 cases in 1994 per 1,000 residents to 1.84 cases per 1,000 residents in 1996.

A decrease in the mortality rate was shown in the following nosologic forms:

Accidents: from 3.08 cases per 1,000 residents in 1994 to 1.67 per 1,000 residents in 1995.
Poisonings: from 0.38 case per 1,000 residents in 1994 to 0.08 case per 1,000 residents in 1996.
Myocardial infarction: from 0.3 case per 1,000 residents in 1994 to 0.17 case per 1,000 residents in 1996.
Hypertonic diseases: from 1.33 cases per 1,000 residents in 1994 to 0.87 case per 1,000 residents in 1996.

Infant mortality has dropped significantly.

All nosologic forms, especially pneumonic ones, showed a decrease from 0.69 case per 1,000 residents in 1994 down to 0.16 case per 1,000 residents in 1996.

ANALYSIS
of the morbidity rate among children of Shchuch'ye Area of Kurgan Region for 1994-1996 per 1,000 residents

The infant and children population of the area is 6,675.

The morbidity rate for infants and children in the area has remained for the past three years at a level between 1245-1295 cases.

In 1995, the morbidity rate decreased to 1,009.

Respiratory diseases are the leading cause of infant and children morbidity. In 1994, it was 723.9; in 1995, 744.5; and in 1996, 517.9.

A minor decrease in the morbidity rate was reported for the following nosologic forms:

- Chronic nasopharyngeal diseases: from 0.3% and 0.7% to 0.1% in 1996;
- Acute pneumonia: from 11.3% in 1994 to 6.6% in 1996;
- A small increase in diseases of pharyngeal tonsils and adenoids from 11.3% to 13.8% was reported in 1996.
- Incidence of bronchial asthma increased 4.7-fold, from 1.4% in 1994 to 6.6% in 1996.

Infectious and parasitic diseases rank second with 142% in 1994, 160% in 1995, and 174% in 1996.

The relatively high morbidity rate is mainly due to helminthiasis.

The third most frequent cause is nervous system and sensory organ diseases which show no marked growth: in 1994, 76.4%; in 1995, 52.6%; and in 1996, 75.8%.

The morbidity rate is significantly lower than the region's (132-149%). Digestive organs diseases contribute to morbidity rate as small as 55.5% in 1994, 56.6% in 1995 and a much bigger share - 165.2% in 1996. The morbidity rate in the area in 1996 increased to the regional level due to greater number of gastric ulcer and duodenal ulcer cases - from 0.1% to 0.4% and gastritis - from 18.7% to 20.3%.

At the regional level unhealthy endocrine systems and malnutrition were responsible for 12.8% of all diseases in 1994, 12.1% in 1995 and 13.6% in 1996.

The level of congenital anomalies in children was 10.6% in 1994, 11.1% in 1995 and 10.8% in 1996. Morbidity at the regional level shows no increase. Perinatal morbidity was below the regional level. In 1994, it was 8.1%; in 1995, 6.5% and in 1996, 7.0%.

CONCLUSIONS

1. The long-term morbidity rate showed a decrease in morbidity, explicable by fewer reported cases of patients seeking medical aid in 1995 when 10 doctors and two pediatricians left their service. Today, the area's rate of medical services with doctors is 10.5 per 10,000 residents compared to 22.0 doctors for the region. Only two of the four medical districts in the town were fully staffed with the necessary personnel in 1995; one therapist left the Kayasanovskaya area hospital.

2. Rural workers became poorer, and the cost of bus tickets increased. All this has made it more difficult for patients to seek medical aid.

3. Morbidity among children at the region level is increasing slowly. Diseases of various parts of the human body have increased with time (e.g. digestive organs, the mouth, skin and subcutaneous fat due to increased incidence of contact dermatitises and eczemas).

4. The major contributor to the considerable increase in morbidity is the greater number of skin and subcutaneous tissue diseases from 15.3 to 57.9 in 1996, compared with the regional level of 46.1, mostly caused by dermatitises and eczemas.

Sedov, M.M., Head of the Shchuch'ye Department of the "Chemical Safety Union"

POSITION OF THE "CHEMICAL SAFETY UNION" ON THE CW DEMILITARIZATION PROBLEM IN SHCHUCH'YE AREA OF KURGAN REGION

Our organization is young: its founding meeting was held on 24 January 1997, and its legal status (certificate of incorporation) was granted as recently as on 17 May 1997. Nowadays, its membership is 60 persons, mainly medical personnel, pensioners and officers. Of course, spontaneous irate outbursts of medical people and pensioners

always arose after each arrival of US personnel in our area (in 1994-1995), and such meetings, unfortunately, took place semi-legally and semi-secretly, thereby causing many highly incredible rumors and much gossip. In January 1997 the movement activists accumulated more than 1,200 signatures for a petition to the President and the State Duma. This effort has consolidated our ranks and later helped to set up our organization. Great assistance in this endeavor was rendered to us by Lev Alexandrovich Fedorov, Doctor of Chemical Science, President of the Interregional Organization, "Chemical Safety Union", with whom we maintain constant telephone and mail communication (since we have no electronic mail or fax).

Naturally, we are experiencing tremendous difficulties, due to lack of finances and facilities (offices, equipment, etc.), though we have made a marked progress in coping with the problems. As a result of our participation in several seminars conducted in Chelyabinsk and Åkaterinburg we have established normal relations with many non-government organizations in the Urals and have enlisted their support, in the case that a problem proved too difficult or us to handle alone. We understand that one of the major keys to dealing with this global issue is, of course, the government's adoption of laws, the effect of which would be felt by our country. Here, an analogy can be drawn with another nation that has almost the same amount of CW: the USA (see Table 1).

We see that this nation's civilized leaders were slowly approaching a solution of this highly important global problem consistently and responsibly, while in our country, as usual, we were working in a rapid downward spiral, with no structured, stage-by-stage plan. Due to this method we spent a lot of time studying the draft of the bill "On CW" and have proposed more than 20 amendments. We would have liked that two other acts concerning compensation and social guarantees would have been adopted without such a hurry and that they would not be so rough-and-ready as the first one. The ignorance of people in the area and region of necessary and true information (constituting an information vacuum) is a serious drawback, and this is also true of governmental agencies, departments and, of course, non-governmental organizations.

Table 1

	USA	Russia
CW production stopped	1969	1987
Adoption of chemical demilitarization law	1984	1996
Evaluation of effects of bases on environment	1990-1991	Absent
Law regulating interaction of authorities and population in CWD	1992	Absent and adoption of such law is questionable
Signing of CWD convention	1993	1993

The public outreach in the US took about ten years (knowledge of laws, environmental culture, detailed acquaintance with CW), while in our country such work has been only started. Our organization plans to set up several teams of information lecturers to

speak to the area communities and even school children. We are trying to make maximum use of mass media in elucidating the issue: our articles are published in the area newspaper “Zvezda” and also in several independent newspapers in the Chelyabinsk region. We consider this, however, insufficient and decided at our coordination meeting to start issuing our own independent newspaper “Nash Golos” (“Our Voice”). Its first issue was published with great difficulty but we now hope to issue it at least once a month despite great financial difficulties.

We explain the population’s unambiguously negative attitude toward the CWD problem and the polarity of expressed opinions by the absence of true and sufficient information, and more specifically, by a lack of knowledge of the problem and the psychological factor (we remember from school learning about the gas attacks on the fronts of World War I). Therefore, the respective work should be slowly, consistently and patiently, but in no way as a campaign (for example, before international Hearings).

In European countries and in the USA, much esteem is given to non-governmental organizations dealing with problems and the various funds that are created to support them. Unfortunately, for now the situation is not the same in our country, though non-governmental organizations are an integral layer between governmental agencies and departments and the population of an area or region. The population so far believes in us and intends to follow us, but we should provide true information to them, and to do so we (and our representatives) should be included in all commissions and independent expert examinations (environmental, legal, facility grounds selecting, etc.) Moreover, at this stage it is necessary to conclude a civil agreement between residents of Shchuch’ye Area and the Ministry of Defense of Russia concerning the stockpiling facilities (settlement Planovy); one of the items in such an agreement should cover the issue of granting permits to “Chemical Safety Union” representatives for permanent access to the facilities grounds. We give much importance both state-sponsored and independent public survey, and we will be trying, of course, to conduct independent environmental, legal, as well as sanitary and epidemiological expert assessments of ambiguous or insufficiently studied situations. But this should not be interpreted as a complete mistrust a state-run assessment. This country has embarked on CWD under the conditions of an acute financial deficit. Delays in paying wages to state employees vary from six to eight months; for pensioners, two months. Men in need are angry, therefore it is necessary to relieve the social tension in some way. We see one of the ways as granting a special status to Shchuch’ye Area as the zone for stockpiling and possibly CWD (for example, in Kizner and Kambarka in the Udmurt Republic of the Russian Federation).

Despite all the difficulties facing the country (we do not know when stabilization will occur, if at all), we shall proceed with a priority of advancing and developing the social sphere. The problem of safe CWD worries us both as activists of the “chemical safety” movement and as area residents, and we insist that our representatives participate in the determination of the best CWD process. It is not in vain that the general meeting held in June this year adopting the motto: “No facilities construction without guaranteed safety and social protection”. Our organization has adopted the Third Public Hearings motto: “From confrontation to cooperation”, and we even amended it with “Toward

fruitful and lasting cooperation in the best solution of the CWD issue"!. We should solve this problem only jointly and only together!

Podtesov, G.N., Deputy Chairman of the Chelyabinsk Region Government

PROPOSAL OF THE CHELAYBINSK REGION GOVERNMENT CONCERNING CW DEMILITARIZATION IN KURGAN REGION

By addressing authorities, the public and public organization representatives in the Chelyabinsk region have voiced serious concern about the planned construction of the CWD facilities near regional boundaries. The Chelyabinsk Region Federation of Trade Unions expresses its categorical protest and considers that "the decision to build facilities which pose environmental hazard in the region and adjacent areas cannot be adopted without taking into account the opinion of the Chelyabinsk region communities." Serious concern over the chemical hazard for the Chelyabinsk population coming out of Shchuch'ye Area has been expressed by the public organization "For Justice" in its address to the RF President.

The scientific community and activists of the Chelyabinsk Municipal Public Organization "Chelyabinsk Scientists Club" believe that the "appearance of supertoxicants, even in trace amounts, in the water and air may result in grave injuries in the population whose health, apart from CWD, has for many years been affected by chemicals and in some areas radioactive pollution of the drinking water, atmosphere and soil".

Undoubtedly, during economic crisis and against the background of a complex environmental and radiation situation, the appearance of a chemical hazard factor has exerted a negative effect on the social and psychological state of the population. In the past few years, the Chelyabinsk region has been faced with a tendency toward increasing social and psychological tension. This is visually demonstrated by the findings of a public opinion survey conducted in the region.

Increase of social and psychological tension in the Chelyabinsk region (%)

If 51% of the population assessed the social and psychological situation in their communities in 1993 as "tense" or "more tense than calm", in 1995 the number increased to 72%, and in 1997 this opinion was shared by as many as 81% of experts. In sociologists' opinion, this level of social tension may be determined as "social stress" or "preliminary readiness for social outrage".

The major problems which worry the population in areas with an unfavorable environmental situation are: fear for their children's future (49%); health conditions (47%); poor living standard (31%); environmental conditions (31%).

This is why the Chelyabinsk Region Government must participate in dealing with the entire complex of issues connected with CWD. Legal bases of its participation are laid in the agreement “On Friendship and Cooperation between the Kurgan and Chelyabinsk Regions” which was signed by the governors of our regions in June 1997.

It should be noted that Shchuch’ye Area borders the Chelyabinsk region areas which, according to data submitted by the Chelyabinsk Regional Committee for Ecology and Nature Management, belong, out of keen awareness of the environmental situation, to regions with critical and tense environmental conditions. The Krasnoarmejsky area is one such area where the internationally infamous river, Techa, flows. In deciding to construct CWD facilities, it should be kept in mind that from 1949 to 1950, 76 cubic meters of sewage with a total radioactivity of 2.75 million curie were dumped into the river by the “Mayak” Production Association in the course of implementing the Soviet atomic weapon development program. This resulted in the excessive radiation exposure of 124,000 Chelyabinsk and Kurgan Region residents, living in villages located on the banks of Techa. Living along the river, 28,000 villagers were exposed to both external and internal radioactive irradiation. It is in the Techa areas that 935 cases of chronic radiation sickness were reported for the first time after Hiroshima and Nagasaki.

As the result of the “Mayak” Production Association’s activity, the health of the people and economy of the Chelyabinsk and Kurgan Regions have suffered such a great loss that they have failed to fully recover even up to now. According to estimates of the Economic Institute of the Siberian Branch of the Russian Academy of Sciences (Åkaterinburg), the cost of harm to the population’s health and production-economic losses — in the Chelyabinsk region only — amount to more than 28 trillion rubles (in 1996 prices).

Dumping radioactive wastes in Techa were partially stipulated by the design and partially dictated by the immediate threat and emergency situations.

Taking into account this known grievous experience, we believe it necessary to consider emergency situations at the CWD facilities which have been both stipulated and not stipulated by the design, making maximum use of the great scientific potential of the South-Ural region scientists who live in the area and lament its future. At this stage of preparatory work, the Chelyabinsk Region Government has proposed enlisting the help of specialists employed at the situations center of the RF nuclear center in Snezhinsk to conduct a public environmental experiment of the CWD facilities. The work of Chelyabinsk nuclear scientists, dealing with simulation of environmental pollution with atmospheric emissions, has won international recognition and been used as the basis for the system of forecasting radiation emergency consequences in the Chelyabinsk region. The first stage of the system developed using advanced information technologies has been operating in the Chelyabinsk region since 1995.

The Ural area, apart from the planned CWD facilities, has other defense enterprises and projects belonging to the RF Nuclear Machinery Ministry (five out of the ten nuclear plants) and to the RF Ministry of Defense. Thus, the chemical safety problem should be solved within the framework of the Federal program-objective jointly with issues of the

environmental and radiation safety of the Ural area population. Kurgan Region administration, in cooperation with the Russian Ministry of Defense, should become the state customer of the program for CWD of stockpiles in Shchuch'ye. The state customer status will make it possible for the regional administration to solve more efficiently the large scope of problems set forth in the proposals sent to the RF Defense Council. In the opinion of the Administration and the Legislative Assembly of the Chelyabinsk region, the "CW Disposal Act" of the Russian Federation should be amended to include the provision concerning the mandatory approval by the RF Government of rules for determining the scope of work and storage procedures for stockpiling, shipment and demilitarization of chemical weapons together not only with RF subjects in whose area CW are is stockpiled and disposed off, but also with RF subjects bordering CWD areas. Such a provision is especially pertinent for the Chelyabinsk region and other subjects of the Russian Federation. The Chelyabinsk region has presented the State Duma with an initiative to amend Clause 2 of the RF Act dated 25 April 1997, and hopes that Kurgan Region representatives will support it.

The population of the Urals region should be sure that when CWD facilities are commissioned the environmental, social and economic situation in the region will not deteriorate, but, on the contrary, improve significantly, and local people will receive guarantees that neither they nor their descendants will have to draft and implement any programs associated with the remedying of chemical pollution consequences for the population and their area.

Peter Hille, Kentucky Environmental Foundation, Co-Founder, Kentucky, USA

THE ROLE OF RESIDENTS IN CHEMICAL WEAPONS DESTRUCTION DECISION-MAKING

My name is Peter Hille. I am a member of the "Shared Earth" organization. My residence is 10 km away from the Blue Grass military arsenal stockpiling CW. We have been interacting with the Army for thirteen years trying to stop construction of the CW incineration units in Kentucky and other CW stockpiling areas.

To make my purpose clear, I would like to emphasize the fact that the two Utah representatives who made their presentations yesterday were invited here by the US Government and have told you only one side of the story. My trip has been privately financed, and I have arrived to tell you the other side of the story. It is important to realize that many Utah residents speak up against incineration technology being used. We don't believe that it is safe for the population. We don't believe that it is safe for the environment. We have performed a number of studies showing that the smoke released from the stack is no cleaner than the smoke entering it. That contradicts the information provided to you yesterday by the Utah representatives. These gentlemen have a right

to express their point of view. However, it is not the opinion of the entire Utah population.

CW were secretly delivered to Kentucky in the Sixties during the Cold War. The population remained ignorant of their existence until the beginning of 1984 when the Army announced its intent to start incineration process. At the first stage of protests against using the incineration technology, we educated ourselves with information from the Army, we participated in public meetings discussing the Army's decisions, and we saw public groups being formed in different areas.

The second phase began in 1987 when the Army announced its official decision to construct CW incineration units in nine stockpiling areas. At this time, public groups continued to grow and become more organized. We coordinated groups from all stockpiling areas into one network called "CW Working Group". The Group held its first national conference in 1990. After we learned about the victory of Chapayevsk residents, we began to establish contacts with the Russian activists dealing with the CW problems.
The Third Phase involved even more of the population into the process. We began trying to get the attention of the US Congress since the Army was reluctant to listen to public opinion. The first action of Congress was to establish the public committee described here over the last few days. It was the only measure taken to involve the population in the process. Its next step was to review the program on alternative technologies for CW inventories in Indiana and Maryland. At these arsenals, CW are stockpiled in containers, not in munitions. As you already know, the Army plans to use the neutralization, rather than incineration, process at these two facilities. This result should be credited to public involvement. We again appealed to Congress to have alternative technologies develop for other stockpiling areas. Last year, the Congress allocated $40 million for alternative technology development to destroy CW, including missiles, mines and artillery projectiles stockpiled at other storage facilities. For the first time, private residents, the Army, and federal and local government representatives worked together to develop alternative methods. Michael Lesnick will discuss this process in his presentation today.

We are fairly certain that the establishment of the public committee and development of alternative technologies is a positive step. That the residents finally got involved into the decision-making process on alternative technologies is historic. These positive events would have never taken place without the joint efforts of local and non-local residents of stockpiling areas.

We have learned a lot about this problem for thirteen years. I would like to share my point of view with you. The first thing we understood was that we the public could educate ourselves in this problem and come up with positive proposals. The second thing we understood was that when it came to purely technical issues, the decisions were purely political. The third thing we understood was the importance of networking public organizations from all stockpiling areas with other joint efforts and actions.

I would like to focus on the problem of how our experience can be applied to the Russian environment. After the discussions we held with the Shchuch'ye residents, I

realized that we have a lot of common problems, including public health, safety issues, our refusal to stockpile CW shipped from other stockpiling areas and our unwillingness to become a dumping site for other toxic substances.

In October 1995 I participated in the first Russian-US meeting among the residents of CW stockpiling areas. The meeting took place in Saratov at the same time as the First Public Hearings held by Green Cross that representatives from five of the seven stockpiling areas in Russia attended. We discovered that we have common concerns.

I don't claim to be an expert on Russia. You are aware of your problems better than visitors. My intent was only to describe the results of my activities in the USA. It is up to you to decide if they can be applied to your environment. If you are willing to establish relations with the residents from stockpiling regions in both Russia and the USA, we would be happy to offer our help.

Pitsunova, O.N., Programs Director, Center for Environmental Advancement

PUBLIC CONTROL OVER THE CW DISPOSAL PROCESS TO ENSURE PUBLIC SAFETY

Dear Ladies and Gentlemen,
Dear colleagues and contenders,

I am happy to have this opportunity to address you at these Hearings. First of all, I would like to note that Kurgan Region administration, Shchuch'ye, and NORZK have worked very hard and put forth much effort, as well as made the financial provisions, to make it possible for us to meet here. I would like to thank the SS International Partnership for making it possible for me to be here today.

I wish to discuss public participation in making decisions and having control over the CW disposal process. Since the present Hearings have been organized due to public response, and they have public orientation as a main goal, I will first discuss the social component or social importance, let us say, of this meeting.

Unfortunately, out of three days of public Hearings only one can really be called a public Hearing per se. The rest of the Hearings are being spent by representatives just talking for their own sake. In fact, there are hardly any Kurgan representatives here. The truly public day was yesterday. Unfortunately, there were not many public representatives here yesterday. After speaking with local residents, I found out that these Hearings were not truly accessible to the general public. Only those who had special invitations, which had been distributed mainly among representatives of Shchuch'ye Area's administrative staff, were admitted into the hall.

There is quite a unilateral representation here. Most of the time was devoted to representatives of only one of the alternative parties. In other words, the military was given the opportunity to express their point of view to the few public representatives

who were present here or in Shchuch'ye so that they could persuade them to construct the CWD facilities.

Needless to say, the information presented at these Hearings was somewhat biased. Peter Hille told us about at least two speeches made yesterday by two Tooele Army Depot representatives. We noticed that in Shchuch'ye yesterday, only one Shchuch'ye representative was permitted to give a very short speech. All the other speeches were given by representatives of the town administration, deputies, and heads of regions. They, of course, do not reflect what all of the area residents wish. The present Hearings are supposed to be for the sake of the public, and I believe that it would have been better for us if we could have heard from more opposing points of view.

However, I would like to point out that compared to the Hearings held in Saratov, in which I also participated, these Hearings have a positive feature. The participants had the opportunity to ask questions, and what is more important, they were able to receive answers. From the public point of view, this is quite an achievement. This is why it is so frustrating for me to say what I just said. If the present Hearing would have been conducted without all the shortcomings mentioned, if it would not have been so evident that there was a desire to exert pressure on public consciousness, on the public frame of mind, with regard to the CWD facilities, and we could truly say that these Hearings were a step in the right direction concerning CW destruction.

I saw no desire from the military nor from the administration to establish an open dialog with the general public. This was quite evident in Shchuch'ye when the head of Shchuch'ye Area administration interrupted speakers rather abruptly when their points of view did not coincide with that of the administration. Why am I telling you this? I would like for the representatives who are present here today not to create a false notion that the Hearings have been a great success. This meeting has not promoted any dialog, and I hope that future Hearings, which should be organized according to EIA procedures, promote an open dialog. I hope these shortcomings will be taken into consideration in the future.

I would also like to say that even if we would disregard all of what I have said, the mere reporting of the Hearing, about which we have talked so much, is not sufficient for this communication process to be promoted. This is just not enough to restore people's trust in the army. People have lost their trust because of the incident in Chapayevsk. If we talk to an uneducated public, if we use scientific terms that they do not understand, no dialog can ever be established. Therefore, it is not enough to just deal with presentations on their own. It is also necessary to educate the public with regard to ecology. Mr. Petrosyan has addressed this very point in his speech in Shchuch'ye. Indeed, I agree that if the general public is to fully participate, it needs a certain amount of background information. In this regard, I like the idea of "open university" very much. Apart from receiving and understanding the information disseminated, the public needs to listen to other opinions. It is important for the public to be given the opportunity to express their various points of view and to be heard and understood by others. The general public must have the opportunity to truly participate in making decisions on issues which are of vital importance to them and which pertain to their well-being and future. It is quite feasible to have the public participate with the US plan or, at least, to take part in the activity of those commissions which exist in all the cities and regions so that they can meet with army representatives, work with governmental commissions, and acquaint themselves with the necessary information

on which to base their opinions. It is not enough to just repeat what you have said if the public can't understand what you're saying in the first place.

Not only should the public participate in the decision-making process, but we must give residents the opportunity, especially those living near the CWD facilities, to oversee the CWD process. The residents themselves must be convinced that this process will not harm them, that facts aren't being kept from them, and that what happened in Chapayevsk will not reoccur. We often think about what occurred in Chapayevsk, and do you know why the public is so righteously angry? For years, people believed that a radio valves factory was being constructed. It was not until Shevarnadze stated that on our steppes behind the Volga river, in sparsely populated steppes near Chapayevsk, the CWD plant had been already constructed that people realized what kind of a plant was built so near to them. How can these people trust what they're told without first verifying the information given to them and without allowing them to inspect the premises?

We often discuss Chapayevsk. We are frightened about what occurred. However, there is a positive side to what happened. After all the protests, civil committees and civil commissions were set up. They have been created at the grass roots level to the public's advantage because now they can take control of such committees and commissions by regularly visiting the plant. People can see for themselves whether or not a building is truly a chemical agents demilitarization plant. Gradually, all the social tension, of which we are all so afraid, will disappear. The public is so suspicious of the military because of our own doing. Their mistrust is a result of their being lied to. People want to be guaranteed that they will have control over the CWD process.

Unfortunately, I do not see any public representatives here today to whom my address really applies. Therefore, I must address my antagonists. I hope that my comments will be taken into account so that domestic tranquility may be assured, so that people feel safe, and so people feel that their welfare and happiness are being considered. Everyone is interested in the demilitarization process and in destroying chemical weapons as soon as reasonably possible. We would like for this to happen as inexpensively as possible and with a maximum level of safety guaranteed. I would like to conclude by not very official appeal. Let’s not repeat the same mistakes!

Matveychyuk, V.M., Member of the Social and Political Council under Kurgan Region Administration.

SOME MEMBERS' POINTS OF VIEW CONCERNING THE SOCIAL AND POLITICAL COUNCIL UNDER KURGAN REGION ADMINISTRATION WITH REGARD TO CHEMICAL WEAPONS DISPOSAL

Dear participants:

The editorial council was given a resolution which has been adopted by the Public and Political Council under Kurgan Region Administration and by Kurgan Region

Duma together with scientists, representatives from various parties, movements, and the general public. I would like to focus on some aspects which have been explained in the course of today's Hearings.

Everyone has the right to live a tranquil and productive life, to be able to benefit from social services, and to be protected against any infringement on their well-being. Therefore, people tend to be against the development, stockpiling, and use of mass destruction weapons such as those with chemical agents. Not everyone agrees that such weapons are merely Cold-War remnants. The USSR was not the first country to drop nuclear bombs on public residences, nor were they the first to set up military blocs. Nowadays, NATO sits at the Russian borders. Who then initiated the Cold War? This is why it is necessary to relocate chemical agents close to the borders of the NATO countries. Only when a war threat is directed from the East to West the destruction of chemical weapons should be started. In that case, there will be no expansion of the military bloc. CW use was forbidden by the Geneva Convention of 1925. However, the development, production, and stockpiling of CW continued. Today, the US, China, Russia, and Israel are the major countries of the world with such stockpiles. We are proponents for the destruction of the chemical weapons stockpiled in our region. This takes into account the opinion of large sections of the public rather than individual views of those who try to scare the public into believing that everything is fine the way it is. Approximately 75% to 80% of the population show little interest in technological and technical aspects of chemical agents. Rather, they are worried about their safety and "social guarantees and compensations."

The current situation in the region and in the country as a whole does not provide a guarantee that disposal and storage of chemical agents will proceed without any consequences to residents of the region.

1. There were no additional funds available for Kurgan Region to study social, economic, environmental, health and sanitation, demographic, and psychological conditions of the area. Radium and chemical pollution from the "Mayak" Production Association, as well as pollution from the neighboring regions due to industrial emissions, have exposed the natural environment to profound anthropogenic transformations, has destroyed landscape foliage, has brought about a shortage of potable water, etc. The Federal Law concerning the security of the population living in environmentally hazardous zones and the state rehabilitation program for polluted territories cannot guarantee that the region's population will cope with the critical environmental situation. All this creates mistrust for the CWD measures taken by authorities. The fact that the purpose of these Hearings, as it was stated during their commencement, is to obtain necessary information from reliable sources does not, of course, ease our minds. We do not disparage any achievements and merits of experts who have spoken at these Hearings. However, we must base our views on the actual situation as it was conveyed here today. The international assistance for constructing CWD facilities is not enough to comply with even one Federal Law concerning the disposal of chemical agents. This assistance was never guaranteed, and so far, nobody has provided it. Before the respective funds even have time to get to our region, certain Moscow commercial banks will begin seeking the help of influential persons in order to have control over the appropriation of funds. This means that the financial resources intended for the CWD facilities in Shchuch'ye will not be appropriated correctly, and if by chance they are, then these funds will not reach us on time.

2. Neither statutory nor legislative acts at the federal and regional levels, even with respect to the CWD law administration, have been developed or been adopted. Moreover, the above-mentioned law does not stipulate what rights residents have to move away from the CWD facilities. What compensation will residents who give up their homes receive? Will they be remunerated for lost agricultural lands? What about local government rights?
3. No one, except the Head of the Region's Administration, has seen the State Program since its preparation stage. They have been making decisions and setting procedures for CW destruction, its consequences, and up to the final stage of CW demilitarization within the strict framework of statutory and legislative acts and without considering the detrimental effects this will have on people and the environment. If the program has been confirmed or approved, as one of the speakers mentioned, then it is impossible to cover all the aspects of the issue when several important activities have not been carried out. Here, it is appropriate to cite the lines from a Russian song: "Perhaps things will turn out all right, perhaps everything will be fine somehow!"
4. Social problems, infrastructure issues, transport systems, timely medical service in the CWD facilities region, etc. are not considered top priorities. Moreover, these issues are being dealt with poorly. Wages, pensions, allowances, stipends, and other payments are constantly - and for a long time now - being paid late. All this incites trepidation in people because it does not seem possible for CWD work to proceed without any negative impacts.
5. The general public's lack of awareness regarding the effects of chemical weapons on humans and on the environment has not been addressed. Furthermore, CW disposal methods and measures associated with the CW destruction have not been made available. How can Shchuch'ye Area residents and those of other areas sell their products? How will other regions react if their land becomes polluted? As usual, we were not kept informed because they were afraid we would have opinions on how they could improve the process.
6. According to Clause 2 of the Federal CW Disposal Law, locations for CWD facilities and CW transportation routes should be agreed upon with state authorities of the RF, the population, and local governments on whose territory the weapons have been stockpiled. It is known from the Hearings, through speeches that were presented, that respective documents are agreed upon with administration heads only. Hence, such documents are not legally valid due to the violation of Clause 10 of the RF Constitution.
7. In compliance with Clause 10 of the Federal CW Disposal Law, a Federal level official can be subjected to administrative discipline only for violating human and environmental safety requirements when working with stockpiling, transporting, and disposing chemical weapons.

Taking into account the importance of this issue and basing our actions on the Human Rights Charter (Articles 15, 17, 41, 42, 45, 46, and 53) of the RF Constitution, Federal CW Disposal Law, Kurgan Region Bylaw, and other statutory and legislative acts for protecting our rights and the environment, we should insist that the following be carried out.

- Study social, economic, environmental, health and hygiene, demographic, and other situations in Kurgan Region.
- Carry out a comprehensive survey of the population and the environment in the CW storage and destruction area.

- Improve the statutory and legislative base before starting CWD work in order to ensure population safety, improve the social realm, and protect the environment.
- Through established legal channels, provide a program to enforce the law within the CWD framework.
- Establish the safety measure zone in the CWD facilities area.
- Conduct the required jobs in accordance with their schedule and planned work scope; the programs are to be financed in full and on time.
- In order to conduct civil engineering work and to implement CW disposal procedures, it is necessary to enlist the help of specialists, volunteers, and former military servicemen from Shchuch'ye. It is also necessary to use other civilians from our region. Priority in civil job allocation should be given to local enterprises on a competition basis only.
- Designate two types of individual protection means in order to safeguard workers against injuries caused by chemical weapons. People should be trained in handling and using said individual protection means.
- Work out safety measures in case of emergency to include the use of a required number of appropriately equipped fire-fighting vehicles, medical personnel, and drugs. It is also necessary to stipulate various types of transport, places, and routes for evacuating people and providing them with the necessary amenities.
- Prepare Russian-made control devices to measure health hazards and environmental pollution.
- Set up a regional commission with extensive powers and rights concerning control, storage, decision-making in disposing of chemical weapons along with the right to stop the work completely, and have control over funds delivery, etc. In doing so, it is necessary to take into consideration each commission member's opinion.
- A full-time member of the commission should be provided from the Federal budget. It is also necessary to have in the region all plans and programs for CWD in Chapayevsk, Novokuznetsk, and Volgograd plants belonging to the RF Ministry of Chemical Industry.

Local mass media should have a permanent column devoted to the chemical weapons destruction process.

Zherebtsova, A.I., Deputy of Kurgan Region Duma.

SOCIAL AND ECONOMIC PROBLEMS OF SHCHUCH'YE AREA POPULATION AND PROPOSALS FOR THEIR RESOLUTION

What is the topic of my speech, you may ask?

First of all, I'd like to say that some of the statutory and legislative documents are available for review while others are not. Everybody knows that if a government or a leader pays no attention to his country's future, i.e., the children, then the country has

no future. Let me cite a concrete example by discussing School No. 3 in our area. During the winter, children studied in classrooms whose walls were covered with snow. School No. 4 in the Planovy settlement was constructed in 1943 as a barracks. It was reconstructed in 1944 to serve as a temporary school building, and as we all know, everything which is temporary somehow becomes permanent. The school is now under constant repair. Now and then, its walls are covered with mold. We do not know whether the school will be ready for the next academic year. For the last 10 years we have had no money to buy even a small piece of wire or reagent for our school's laboratory; we have been given no equipment. It is very difficult to work under such conditions not to mention that teachers were only paid for the month of December. Thank God that we were on leave during the months of June and July.

If we see that the situation does not change but yet that a new project is to be constructed in our area, then new infrastructures, amenities, and social benefits must be provided. People know that they can hold out until the situation is remedied. Nevertheless, we are still scared. In 1980, an accident occurred in a military unit in our region (The unit was placed here 50 years ago.) As a result, people suffered serious injuries. Moreover, an accident occurred in our school when in one of the classrooms we could not determine what the school children inhaled. The children began to cough and cry. The classroom could not be used for an entire week. We were not provided with the necessary instruments to sample the air and soil. Such instruments are necessary in our area; we need them now. For 50 years now, adequate conditions have not been provided for those working in the area. Are we sure that they will be provided within 5 years?

This is why we are doubtful when we are told that the situation here will improve drastically. In Moscow we were convinced that an efficient technology is really available, but we are not sure about the second stage. I would like to say that we are still not well-informed, and even now, speakers at our Hearings say that information provision should be funded by some agency or another. It is necessary to have constant interaction in order to keep our people informed about what is going on with the CWD project.

For example, school children in Kambarka and Kizner are fully informed, yet people in our area know very little. Just yesterday people were saying, "Well, we finally heard something." Once the opportunity exists to improve our living conditions we say "Yes," but we suggest that an experimental unit should first be constructed, preferably in some other place. Participants at the Hearings said that all the stages have been allegedly developed; nevertheless, people's doubts still persist. We must think about how to disseminate information so that the population becomes aware of the safety risks associated with all the stages. We must believe that all stages are absolutely safe and truly have been subjected to a rigorous expert evaluation. We were promised to be shown a film about the plant's operation. We would like to see it. Besides, we would like to know more about our unit. What and how many materials are stockpiled there? We should know what we can film and what is forbidden to be filmed. People should be given more information so they can see for themselves what is happening. Less secrets, more trust.

Yuzhalin, A.P., Head of the Kurgan Geological Prospecting Team

ON THE CHUMLYAK AQUIFER ISSUE

Dear Participants of the Hearings:

I wish I had the opportunity to make my presentation in Shchuch'ye yesterday. There was no need to set such strict time requirements, nor was there the need to restrict the number of speakers who could address the audience.

I am a representative of Kurgan Region Geological Prospecting Party acting on behalf of the Urals Geological Committee of the Ministry of Natural Resources. We are responsible for dealing with all past, current, and future issues concerning the use of water, including underground water. Therefore, this is the perfect time to discuss all the problems associated with the Chumlyak Aquifer, the current water supply source for Shchuch'ye. The aquifer should continue to be the water supply source for Shchuch'ye as well as the Industrial Area.

Historical background. The aquifer was discovered 30 years ago with water reserves equal to 8100 m^3 per day, making this a unique aquifer as there are none of its kind in the region. Thus, we must consider protecting this rare resource as the aquifer isn't an overflowing cask of wine. The aquifer's current condition and operation leave much to be desired. This difficult-to-obtain underground water flows to the surface through lakes and rivers. The first problem I would like to raise is that water intake and the use of the water pipeline are not in accordance with set standards.

The second problem deals with the fact that no one regulates the aquifer. What are the aquifer reserves? Nobody knows. What kind of changes in the quality of the aquifer are taking place? Nobody knows this either. This nascence is the result of no monitoring. This calls for drastic action aimed at decreasing water loss, establishing a monitoring system, and setting up a network of observation wells. This is not something new; it's been needed for a while.

Let me discuss the aquifer's future. Approximately 7000 m^3 of water per day will be pumped. This figure is close to the aquifer reserve limits. The organizers of this effort say that this might lead to the depletion of the aquifer and changes in water quality as salt water may possibly infiltrate the water supply. Therefore, it is absolutely necessary to establish continuous hydrogeological monitoring as part of the environmental regulating system.

And another thing. In order to reduce the possibility of salt water infiltrating the aquifer, it is necessary to decrease the amount of water pumped. It is possible to use the aquifer only for the needs associated with the Shchuch'ye development and to involve other independent sources established directly at the Industrial Area to satisfy the latter's demands. An inexpensive Industrial Area survey will allow us to consider this contingency.

There is one more point I would like to make concerning the quality of water. The specialists involved in the water quality certification process are liable to conclude that the water quality complies with the State Standards (GOST), and except for the high boron and bromine content, the quality of water may legitimately be classified as

"potable water." What do they mean by "except for the high boron and bromine content?" What kind of impact can this exception have on public health? Unfortunately, the entire Kurgan Region population is using potable water containing natural boron, bromine, iron, and manganese. What can we do? Should we accept the regional norms which allow us to use this contaminated water? After all, we are drinking it anyway. Or, should we include the water treatment process into the design concept?

In conclusion, I would like to share my deepest concern with you. What will happen if we allow the aquifer to become depleted? What will happen to the city after the CWD operations are completed? Does the possibility exist that we will discover a similar aquifer adjacent to Shchuch'ye? There is no doubt about it; I think it is impossible for another aquifer to be located closer than the Chumlyak Aquifer. However, the area along the Miass streams is insufficiently surveyed from the geological standpoint. We believe that it is possible to find a new aquifer, similar to the Chumlyak Aquifer, in the area along the Miass streams. However, in order to proceed with such surveying, we need funding and a statement of work. We hope that our above-mentioned concerns will be considered when planning the design for the geological survey in the near future.

Manilo, I. I., President of Kurgan Region Branch of the Russian Green Cross (RGC)

THE ROLE OF SOCIAL MOVEMENTS AND THE RGC KURGAN REGION BRANCH IN THE FORMATION OF PUBLIC OPINION ON THE ISSUE OF CW DEMILITARIZATION

Ladies and gentlemen,

Esteemed colleagues, dear friends,

On behalf of the Presidium, activists and founders of Kurgan Region Branch of the Russian National Organization of the International Green Cross, I welcome you once again and wish you a successful completion of these Hearings.

CWD stockpiles in the storage facility near Shchuch'ye has roused the worry of the population, not just in Shchuch'ye Area but in the entire Region and its neighbors, in particular the residents of the Chelyabinsk Region. Passions ran progressively higher approaching Third Public Hearings on the issue of CWD in Kurgan Region.

This is hardly unusual. The world community has discussed the CWD issue for decades, but it was not until 10-15 years ago that it realized that the storage of enormous amounts of CW presents a serious hazard to the whole of humanity.

The potential threat posed by the existing CW storage facilities, infamous for their viciously antihuman nature, makes their destruction imperative.

The central problem raised by CWDF construction for the armory located at Planovy (which comes under Shchuch'ye jurisdiction) is ensuring the safety of the population as well as the environment.

We need to address this problem in the context of several other socio-economic problems, aggravated by the unsatisfactory environmental condition. This poor environmental state is due to the grossly insufficient funding provided under the area rehabilitation program aimed to remedy the radioactive contamination caused by the PO "Mayak".

Held in this region, meetings and conferences of social movements and public councils are molding public opinion, a manifestation of the collective conscience that expresses generally and indirectly the public's real attitude that construction of a CWDF infringes on their needs and interests.

Public opinion is also being formed amid a ganglion of pressing social and economic problems (non-payment of pensions, many months of arrears of wages, lack of material aid to the clean-up of the Chernobyl Nuclear Power Plant accident, unsatisfactory implementation of the rehabilitation program for the region's territories, and others), all of which are magnified by an unsatisfactory environmental situation. No one can deny that these are today's realities. Under the direct influence of these vital circumstances, a diversely representative but unified public opinion on the issue of CWDF construction evolves spontaneously.

At the same time, public opinion on the problem's resolution is being molded by the purposeful efforts of social movements and associations, environmental and political organizations, and individual community leaders. These efforts rely heavily on media support.

Esteemed participants of the Hearings,

Kurgan Region Branch of the Russian National Organization of the International Green Cross was established and incorporated in March 1997. The branch has 44 members, among them teachers in Kurgan colleges, heads of organizations and businesses and their structural parts, and pensioners.

CWD of stockpiles in Shchuch'ye Area is an urgent task, high on the Branch's agenda.

But it would be clearly ludicrous for our Branch to claim any fruitful achievements in such a short period.

Therefore, I should like to share with those present in this auditorium what roles we feel members of our Branch should play in dealing with the CWD problem.

Our Branch's first task is to launch a broad campaign to raise public awareness of the need for CWD of stockpiles that have the potential, not just to aggravate the poor living conditions of the residents of Shchuch'ye, Shumikha and other areas, but to cause a regional-scope disaster.

With this aim in view Branch members will speak before students and industrial workers and publish in the local press. They will also meet with the public at the CWD Information Analysis Center, which has been set up with the help of US colleagues. I take this opportunity to invite you to take a stroll around town and to visit our Center during the lunch-break.

One of the most urgent and important tasks our Branch faces today is implementing a public examination of the project "Justification of Investments in the Development of a CWDF". The examiners include three experts with long-standing experience of design and designer's supervision of building, assembly and start-up operations of complex engineering projects, and four persons who act as observers on the State Examination Commission.

It is too early to discuss the examiners' findings. I can say just one thing: the project designers will have to resolve some of the comments and suggestions.

Now let me present some considerations on this problem which in some measure have a more direct bearing on the development of a CWDF. The two and a half days of Hearings, plus yesterday's discussion meeting with Shchuch'ye residents in the town square, have demonstrated that the only thing to do is to destroy CW before they destroy us in the not so distant future. Keeping in mind the needs of the area population, we need to create a social infrastructure. While design and construction work is in progress to develop a social infrastructure, it will be possible to optimize the techniques of munitions deactivation and chemical agents destruction for a safe and fast CWD.

I am familiar with the economic problems of design organizations and civil engineering companies in Kurgan and the Region. I am convinced that the design and construction of nearly the whole social infrastructure, and even some buildings and structures in the industrial zone, should be entrusted to design offices and building organizations of the region. Why shouldn't we when design and research institutions archive documents for the existing social infrastructure, including Shchuch'ye and Planovy?

Esteemed Lev Alexandrovich! I doubt that we can accept without explanation your view that Markel Markelovich Sedov, head of the Shchuch'ye local organization of the Union for Chemical Safety, should be issued a permanent pass to visit the CW stockpiling facility.

Today, there are more than twenty public associations on record in Kurgan Region whose statutory goals include the solution of environmental problems. Arguably, any of them may come forward demanding that their representative be admitted to the facility. Who will be the judge or expert vested with the power to decide who and on what grounds is to gain entry to the facility? What criteria should be used in choosing the

public association whose representative will have access to the facility premises? Yesterday, Markel Markelovich expressed his opinion that the Union for Chemical Safety as the most authoritative organization was the obvious choice among the public associations. I would have much rather concurred with this view if Markel Markelovich had argued that their organization was relatively large (some 60 members) and the nearest to the CW stockpiling facility. I beg your pardon, but this argument does not hold water. I have a general idea of that organization's personnel and I contend that our organization — with 44 members of which fourteen have academic degrees and titles, some of them for research on radiation and chemical safety — has more professionals who are competent and skilled to give appraisals of the facility.
I should apologize for these arguments, but it is by no means an easy question to answer. If my further reasoning is incorrect, I don't mind being corrected by spokesmen for the RF Ministry of Defense. As I see it, the gist of the matter is this. I am not aware that the CW stockpiling facility was removed as a combat unit from the authority of the Ministry of Defense, still one of the vital elements of this country's defense. And while some public associations seem to be willing to turn a high-security facility — in terms of both defense needs and possible hazards — into a thoroughfare, it is not only impracticable but downright illegal under the law.

I admit, there is an alternative: all the public associations create a coalition or union to nominate, in a civilized and reasonable manner, one or perhaps two candidates for obtaining a possible, I repeat possible, clearance to visit the facility.

According to repeated statements of A. S. Kulikov, Minister of Internal Affairs of the Russian Federation, the situation in Russia today is characterized by highly criminal activity. Criminal groups are expanding their interests in all directions. It is not uncommon for them to have intellectual and technological support superior to that of the security forces. Therefore, instead of expostulating on the alleged excessive secrecy of the military, we should recognize the expediency of placing exacting demands on the facility's security in today's socio-economic and military-political situation.

I feel that, apart from social guarantees, all manner of indemnities and benefits to be granted to residents, we ought to consider the question of compensation for economic and possibly moral damages suffered by the area's commodity producers. While the development of a CWDF is still in the relatively distant future, producers of some commodities are suffering losses even now. "Chemophobia" is to blame. For example, a mixed fodder factory cannot sell at a profit its produce which until recently sold out as soon as it was on the market. The customer has fallen victim to "chemophobia", scared to buy products manufactured in Shchuch'ye Area which is gaining notoriety primarily as the venue of a CW storage base and a future CWDF.

Now to another outstanding problem. In Kurgan Region, there are some 700 tons of pesticides which have long outlived their storage life. These substances are typically stored in the open air, and they seep into the ground and in springtime flow into rivers and lakes. Unannounced and imperceptible, chemical warfare against the population and environment is being waged. And this problem is faced by every area within the Russian Federation. It has been suggested that several facilities be built in some

regions to process or destroy such pesticides from all regions. I figure that when the CWDF is built we will be able, after conversion and some reconstruction, to cope with this problem quite well.

It will then be possible to make preparations for agriculture and animal husbandry. The facility and social infrastructure, developed at an astronomical cost by our standards, should be operating and producing results.

I realize that this is a question influenced not only political or engineering factors, but other factors as well.

But I have no doubt that this is a soluble problem, particularly if we consider that economic and military-political realities often change after the meetings of heads of state or even their leading departments.

The negative attitude held by a large part of the population toward the construction of the CWDF can also be mitigated if everyone is sure that proper safety measures have been enforced.

Therefore, the design estimates should incorporate a requirement of “reasonably attainable safety”. The regulatory indicators should include the likelihood of detriment to the health of both facility employees and the surrounding population.

The “reasonableness” threshold should be defined by the criterion of cost-effectiveness, i.e., compliance with the requirement of “reasonably attainable safety” must be expressed by the expenditure for each case of sickness or death.

To my knowledge, there are no established limits for disease prevention expenditures nor for individuals case of death prevention at this kind of facility, as they have been so far nonexistent, providing us with no experience. Why did I touch upon this issue? Such are the current socio-economic realities that the relatives of young people who are leaving this world before their time are unable to procure the funeral expenses, despite a package of relevant laws, some of which provide for social guarantees and benefits for those who took part in the clean-up of the Chernobyl Nuclear Power Plant accident, and despite a government program that deals with this problem. I was repeatedly asked this question by Shchuch’ye residents yesterday.

I believe that researchers and specialists working in the “firm” of the esteemed Professor Yury Mikhailovich Kolodkin, jointly with jurists, ought to set the above-mentioned limits to spending for disease and death prevention.

Now I should like to share with you some considerations on the operations and prospects of our Information Analysis Centers.

You must be knowledgeable and experienced enough to answer competently the whole range of questions that Kurgan Region’s residents and visitors ask you about the CWD issue. The staff of our Information Analysis Centers (IAC), designed to keep the public informed about the CWD issue in the towns of Kurgan and Shchuch’ye, have some

knowledge and experience in the fields of chemical safety, environmental monitoring, etc.

The Shchuch'ye IAC has the following full-time staff:

< Ms G. I. Vepreva, a history teacher (top category, senior teacher), an educator, experienced lecturer and expert of environmental knowledge;
< Mr V. Yu. Lagoida, a chemistry and biology teacher.

The Kurgan IAC has the following full-time staff:
< I. I. Manilo, Cand. Sc. (Eng.), member of the International Academy of Environmental Sciences and Vital Activity Safety, Merited Inventor of the Russian Federation, Merited Rationalizer of the Russian Federation, one-time officer in the gas troops of the Russian Defense Ministry, who has written dozens of scientific papers on problems of nuclear, radiation and chemical safety to his credit;
< A. M. Sidorov, an engineer with many years of employment in information analysis services at organizations and businesses in the city of Kurgan.

Working on a voluntary basis at the Kurgan IAC are well-known scientists and professionals who are founders and active members of the regional branch of the Russian National Organization of the International Green Cross, and who are involved in a large-scale educational effort and who respond to specific inquiries about the issue of safe storage and subsequent CWD, among them:

< V. I. Yakhontov, Cand. Sc. (Eng.), Associate Professor, member of the International Academy of Environmental Sciences and Vital Activity Safety, Rector of the Kurgan State Institute of Public Officers, member of the Presidium of the Regional Branch of the Russian National Organization of the International Green Cross;
< S. A. Pokazaniev, Cand. Sc. (Agr.), corresponding member of the International Academy of Environmental Sciences and Vital Activity Safety, chief expert at the Department of Area Rehabilitation of Kurgan Region Administration, member of the Presidium of the Regional Branch of the Russian National Organization of the International Green Cross;
< A. P. Kuzmin, Cand. Sc. (Eng.), Professor, member of the International Academy of Environmental Sciences and Vital Activity Safety, Faculty Head of Industrial Ecology and Vital Activity Safety at Kurgan State University, member of the Presidium of the Regional Branch of the Russian National Organization of the International Green Cross;
< O. G. Zavyalova, Cand. Sc. (Geogr.), Professor, Faculty Head at the Institute for Advanced Training of Educators, member of the Presidium of the Regional Branch of the Russian National Organization of the International Green Cross;
< A. S. Taranov, Cand. Sc. (Eng.), Associate Professor at Kurgan State University, member of the Presidium of the Regional Branch of the Russian National Organization of the International Green Cross;
< A. A. Mikhailov, Cand. Sc. (Hist.), member of the International Academy of Environmental Sciences and Vital Activity Safety, Associate Professor at Kurgan State University, member of the Presidium of the Regional Branch of the Russian National Organization of the International Green Cross;

- V. K. Avdienko, pensioner, former operator at the Sverdlovsk News Film Studio for Kurgan Region, member of the Presidium of the Regional Branch of the Russian National Organization of the International Green Cross;
- V. A. Ivanovich, director of the Adonis Research and Application Enterprise, member of the Presidium of the Regional Branch of the Russian National Organization of the International Green Cross;
- V. F. Chernov, Cand. Sc. (Med.), member of the International Academy of Environmental Sciences and Vital Activity Safety, Director of the Republican Center for Ventricular Gastroenterology.

The two Centers are supplied with relevant information materials, domestic as well as foreign (mainly from the US) in the form of booklets, books, newspapers and magazines, as well as videos. Yesterday, we received eight volumes of a feasibility study of investments in the construction of a CWDF within Shchuch'ye Area, developed by the Giprosintez Corporation under commission from the US Department of Defense Special Weapons Command. This appreciable addition to the Center will make it possible to advise competently Center visitors on specific questions and to demonstrate convincingly the standard of preliminary scientific and technological decisions that have been made with regard to the safety of CWD efforts. Identical design documents have been forwarded to the Shchuch'ye IAC.

The Center has office equipment (a computer with modem, a photocopier, and a fax machine) and furniture. Thus far, all of it has been under lease. The three days of these public Hearings have demonstrated the pressing need for continuing development of the Information Analysis Centers and streamlining their operations. These matters were touched on in the presentations of Professor S. I. Baranovsky, Vice-President of the Russian National Organization of the International Green Cross; Moscow University Professor V. S. Petrosyan; Major-General N. M. Bezborodov, member of the State Duma of the Russian Federation, and others. We have just heard Ms O. N. Pitsunova refer to the much-discussed incident in the town of Chapayevsk to emphasize that an effective dialogue between representatives of the CWDF and the population can be developed only if we keep the public continuing and timely informed and educate the people as to environmental issues.

I concur fully with her assertion that the policy of pervasive classification of information which has been pursued for decades led to the public's loss of confidence in executives at all levels, especially in military experts and commanders. Holding public Hearings can ascertain only whether dialogue between the representatives and the public has been successful, and why.

It is only through ongoing, timely and objective information to all groups of the population that we may hope to resolve this problem. We need to involve in these daily, painstaking efforts to educate the public all media and all legislative and executive bodies. The Information Analysis Centers, designed to maintain public awareness of CWD issues, seem to be an effective and optimal component in this environmental information and education network.

First, they are virtually free of the influences and actions of local authorities and are thus able to provide objective coverage of any aspect of safe storage and planned CWD.

Second, the public will more readily visit such a center to address some of their concerns, and will pose all kinds of questions, including those about the local government's policy on the problem that we are discussing at these Hearings. Furthermore, any local resident or visitor can have access to our documentation and other relevant materials from early morning until late night.

Third, our experience, albeit limited, has shown that most of the work of collecting, processing and analyzing information on the CWD issue is done by researchers and professionals on a voluntary basis. They too maintain feedback from the public, as they bring collected and analyzed information to the public through lectures, talks, etc.

Fourth, at the Centers the visitor will be listened to with patience, where he or she is able to speak out on any aspect of the CWD issue without fear of being misunderstood or, worse, insulted or bullied for their "obnoxious" questions and statements. What is perhaps most important, the Information Analysis Centers visibly demonstrate a policy of openness concerning information about the CWD issue.

The Information Analysis Centers are a necessity and, we feel that this must be clearly and directly stated in the final document of these Hearings.

Nikolai Maximovich Bezborodov was quite justified in saying that the Information Analysis Center would have much to do with how effectively information from these Hearings would be used to attune public opinion to the necessity of rapid CWD. Unless they receive material support from the Administration and the Russian National Organization of the International Green Cross, the Center's effective operation is highly problematic. Running this business requires more than selfless commitment of researchers and professionals; it requires rent for the building, office equipment, payment of telephone calls, etc. In other words, regular and permanent funding is needed for the effective operation of an IAC.

Yesterday, in Shchuch'ye, it was made painfully clear that the counteraction of the local population did exist. Also, there has been very active local opposition represented by the area branch of the Union for Chemical Safety whose views on the CWD issue are shared by the residents, not only of Shchuch'ye Area, but Shumikha, Safakulevo and some other areas as well.

If we fail to use active and systematic efforts to explain the need for timely CWD — in line with the comprehensive plan for safe CWD — it may jeopardize the implementation of the CWD plan.

In light of this, our regional branch of the Russian National Organization of the International Green Cross has made it a priority to make the public accept that the CWDF will be located here, not elsewhere. This leads to a second, no less complicated task which calls for ongoing and laborious efforts. What I have in mind is a public

examination encompassing the phases of the CWDF project, from design through construction to operation.

The Third Public Hearings on the CWD Issue is the first step taken together, publicly, by representatives of various departments, legislative and executive bodies, social movements, and the public at large. It will take us a long time to gain full awareness of the ideas and suggestions put forward by Hearings participants. Let me wish you success in these efforts and a strong commitment in all your endeavors that are in some way connected with the early and safe resolution of the CWD problem on this beautiful Planet Earth! We are now less than ten and a half years away from that midnight when humanity enters its year 2008, the third millennium A.D. It is my wish that everyone present here will live to see on a brand-new calendar the anticipated date, January 1, 2008, and will recall, along with their other good deeds, their contribution to delivering humanity from lethal weapons. To achieve this goal in a not so distant, foreseeable future, I wish you good health and commitment, and as our Hearings amply demonstrate, each of us has the desire to do so!

Bezborodov, N.M., Deputy Chairman, Committee for Defense, State Duma of the Russian Federation

THE NEED FOR MAKING EFFECTIVE USE OF THE THIRD PUBLIC HEARINGS MATERIALS IN THE SOLUTION OF THE CHEMICAL WEAPONS DESTRUCTION PROBLEM

Ladies and gentlemen, comrades and colleagues,

I must begin by apologizing for having been unable to take an active part in the sessions held on the two previous days. I was participating in the work of the Organization on Security and Cooperation, the parliamentary assembly in Europe which once again emphasized and considered a key issue and problem, namely that of inadmissibility of technogenic disasters in OSCE member countries.

This is indeed a serious problem that has brought us together today. The problem of CWD has come to a head, and however often we put it off, we will face it again and again. The gravity of the problem is underscored by two circumstances of which we were made aware in the course of these Hearings.

The first is the unrest of the residents of Kurgan and Shchuch'ye; the second is the highly representative nature of these Hearings. Everything seems to point to a grave problem, a problem which has to be solved. The public's agitation is natural. The extent of the public's agitation will be in inverse proportion to the extent of its being kept informed. And that realization, which these Hearings have aided, without a doubt needs to be seriously considered and brought to the attention of both the public and interested experts. Making good use of this information depends much on the

information center, which has been set up but needs all-around support from the administration, the legislature, and federal-level specialists, including the State Duma. We have to support it so that it does not run low but stays ahead of the game and operates in a planned and thorough manner. But it would be unfair and unjustified to reduce the center's operations to the task of keeping the public informed; our primary goal is to develop the necessary expertise, so that when we finally come to the implementation of CWD we shall be fully competent to do it. And there is no doubt that the safety, security, planned execution, and timeliness of these efforts will depend directly on the legal domain, on bills to be drawn up and enacted in a timely manner.

The first bill or, as we call it, the basic act — the CW Demilitarization Act — has been passed. There have been differences of opinion and much idle talk surrounding this act, but it looks as though it was passed in principle in proper time, maybe even overdue in some respects, but we need it in order to begin more detailed work on a law package. I will tell you with full responsibility that the State Duma Committee for Defense is well aware of the need to step up efforts to pass these laws, primarily the Law on the Social Protection of Residents in Employment. I want to state that today both the Government and the Defense Committee are doing everything in their power to have the bill submitted to State Duma this September.

The second bill is On Compensatory Payments for Damage Suffered from Toxic Chemicals. We are doing all we can to have this bill submitted to the Duma by the end of the year, in December at latest, so that we can start work on it. The viability and depth of these laws will largely depend on how carefully all of us, including the Defense Committee, treat the problems which have been discussed here during these three days. I want to tell you but one thing: it would be wrong and unfair to disregard the problems that we have discussed today, yesterday and the day before yesterday. If there are such problems, we need to pay attention to them and to work on a respective bill. The Hearings, on the one hand, sum up the initial phase, at least in Kurgan Region, of the preparations for the construction of this facility, and on the other hand, begin the next phase, which will be longer, more serious and more substantive. That is why I take this occasion to request your cooperation — when our guests have departed having elucidated the questions they came to elucidate — in staying here and working, jointly with executive and legislative powers and representatives of the Federal Assembly, on finding solutions to these problems. Therefore, I want but one thing from you: less self-importance and more competence, more sound arguments and closer collaboration, because today we have no one here who is opposed to CWD. It is everyone's concern. So let us work as a team. There is no other way.

Alexeyev, V.A., Head of the Kiznersky Area Administration, Udmurt Republic, Russian Federation

FROM WORK EXPERIENCE IN THE KIZNERSKY AREA ADMINISTRATION, UDMURT REPUBLIC, CONCERNING PREPARATION FOR SETTING UP CW DEMILITARIZATION FACILITIES

Dear colleagues and guests,

The subject of my report was chosen not by chance; it is somewhat connected to my speech in Shchuch'ye where I spoke about our operational experience. During the period under review when the Udmurt Republic, with its two CW depots, was trying to cope with CW storage issues, we at the same time had been developing a strategy for dealing with the problems. This is what I am going to discuss today.

The first issue in dealing with the problem is, in our opinion, associated with so-called preparatory measures or work which is, first of all, connected with the limited term of the Convention's validity. On 29 April, the Convention became effective and there are quite definite deadlines for its implementation.

The second issue is associated with the quality of the future CWDF. The facility's quality depends on whether the preparatory work will be carried out prior to construction of the facility building, prior to its design, and so on.

The third issue is the efficiency and utilization of the CWDF, which to a great extent depends on other factors which are not taken into account today and should be considered prior to completion of construction. You know that there was an Russian adage that said we construct first and then think. Now we need to lay down communication lines, do some other things, stop some projects, and complete other projects. The CWDF cannot be constructed as a phase project. Every project is unique. Before, during my work as the Administration Head, I had to allow the operation of similar projects which were under construction for many years; the necessary level of preparatory work was crucial for completing the project. I feel sorry for a project, if it is constructed like Renault cars, each of which is identical, but this is not the case with this project, and we need to understand that from the outset. Assessment, too, will cover only individual project components, such as technology, safety and other issues. Preparatory work determines many aspects of the project construction, including civil population and work safety.

Finally, another important aspect of conducting preparatory work is efficient use of budgetary funds related to the implementation of the RF program-objective for CWD.

It is these major issues that create several problems which should be solved and which constitute the preparatory work stage. What kind of work is included in this stage? Of course, the work we talked about today, namely: creation of an engineering infrastructure in the areas, survey of their population and determination of the degree of risk for public health, construction of dual-purpose projects which need to be set up irrespective of the main technology and the project operation pattern (this includes gas pipelines, electricity supply, laying of communication lines, warning system, security, etc.).

Finally, even a survey of the land plot designed for the construction is a crucial aspect because we would not want to erect the facilities on a site burying ancient Carthage, therefore, archeological excavations at such construction sites should be carried out.

We, at least in Kizner, agreed that scientists from the Udmurt State University will conduct such work in places selected on a priority basis for the project construction site. We are not asking the federal budget to finance the work.

Problems of environmental monitoring and problems of environmental education and personnel training, already touched upon here, are also among the issues to be dealt with at the preparatory stage. Preparation of medical institutions located in our area and, of course, development of an information network and the required warning system should also be considered. It is clear that all the jobs are connected not only with the Federal program-objective, but also with the everyday life of areas where CW are not stored.

To implement all this, as I already told you yesterday, we decided to break down the jobs into the following four levels: local level, the Udmurt Republic, the Federal level, and the international level. At least in our area we began establishing a wide range of various ties with our esteemed sponsor, the Green Cross, which is conducting these Hearings, too. In order to fulfill all these jobs at the four levels, we have developed a package of initiatives: area initiative, Administration initiative, authority initiative, and public initiative. We have divided them into three levels.

Level one: legislative initiative which implies our participation and initiative at the local, republic and other levels. I already spoke about what has been developed in the Udmurt Republic in this respect, what acts have been adopted and what acts are to be adopted.

Level two: financial initiative. Petitioning for money all the time is a complex thing, especially when we solve many problems ourselves. We made a simple calculation. 1996 has passed, so what were our expenses outside of allocations from the Federal budget? Taking into account the fund created to support residents living in the CW storage zone; the work of the Conventional Issues Committee which actively deals with problems; and the completion status within the area framework; and the visible result of the Udmurt Republic's financial support: we have determined our expenses to be about 1.5 to 2.0 billion rubles. It is not much, but it is real money that has been invested. There is one more important aspect which should be highlighted here. Financial initiative should not be considered separately from the area's economy. That we have planned work projects to be carried out in 1997-1998 at the expense of non-budget financial sources helps in the final analysis to promote our area's economy. Construction of houses, for example, brings money into the area in the form of taxes which are spent on public health, social amenities, etc.

Level three: public organizations initiative. For us it is an important aspect, perhaps, the most important. It would be difficult for us to do anything without the assistance of several public organizations. First, they help us to educate the population and to create the fund which I talked about. The fund reminds me somehow of the US voluntary work committee. In our case it is also an unpaid organization in which scientists, academicians and professors work jointly with area residents. Nevertheless, the fund is operating, helping people now. The third level includes a survey of those who have suffered working with CW. The level also covers activities which are now fulfilled by the

fund. The fund has its charter registered at the Ministry of Justice; it operates as a public organization and maintains ties with various movements. We have our own branch office of the Green Cross. We have several other organizations in our area which are very active.

Here, I want to say that many questions have to be answered, at the preparatory work stage, and this work is already in progress in the area. The problems facing us now are connected with the legislative base. I already mentioned that the State Council of the Udmurt Republic, on 1 July 1997, adopted the decree which granted special zone status to the Kizner and Kambarka areas and which pertains to many aspects of public life. The decree would not have been adopted if there were no CW law. It is exactly one year ago that our draft proposal concerning “Special status provision” was returned to us. Lawyers told us that there was no legislative basis for its adoption, but when such a law was issued, not more than two months later, on July 1, 1997, the State Council of the Udmurt Republic adopted this provision.

I believe that many other issues in our country, as we can clearly see, are stagnant — especially concerning international assistance, since Russian has failed to ratify the Convention. When we met our colleagues in Bern and discussed these problems, I remember their saying: We shall see how the Russian Federation and the USA will themselves behave. To be frank, we could not imagine at that time how they would behave. The USA has ratified the Convention, but we are still thinking, and losing much because of it.

Our Hearings’ are growing in popularity, not just as public Hearings, but also due to their in-depth studies connected with CWD in Russia and the importance of the Hearing participants’ opinions for our legislative bodies and executive authorities.

To conclude I would like to mention one more feature of our experience. It would be difficult to work at the preparatory measures stage if the CW storage and future CWD areas fail to combine their efforts, because even exchanging opinions among each other at these Hearings has shown once more that we can do some things better, and some things worse, than outsiders. We shall be stronger, if seven heads of administrations sign the document and send it as our common opinion to the State Duma. I know that if there is a consultative agency of the government heads of regions where CW are stockpiled, there is no harm in creating a consultative body of local authorities. On the contrary, I believe that such a body will only be useful.

I would like to add the following: Nowadays the issues of CWD in the Russian Federation concern not only Heads of Administrations, but also the military and the general public. Moreover, the problem is international by its nature, and the more our network reaches into all fields, the more opportunities will be available for us to exchange experiences and, more important, to help one another. I not only say that today we may receive help from the USA and other countries, but we can also use our accumulated experience in dealing with the public, with problems of preparatory measures and other undertakings associated with construction of CWD facilities in Russia.

Stephen Robinson, Program Coordinator, Green Cross International

PUBLIC PARTICIPATION DURING THE CONSTRUCTION OF THE BASEL TOXIC WASTE INCINERATOR

1. Introduction

The construction of the toxic waste incinerator in Basel, at the end of the 80s, caused confrontation between the population and its builder, namely, the Ciba-Geigy Chemical Facility. This presentation analyzes the Baseline positions of the parties involved and the new approaches developed to resolve the conflict.

I would like to describe this recent incident, since it draws many parallels to the contested issues related to a chemical weapons destruction facility. Following are some characteristic features of what happened:

- a hazardous process facility was to be created;
- the facility would have an impact on Switzerland and its neighbors, i.e. France and Germany, on both a local and national scale;
- the parties involved were typical of environmental conflicts;
- new ways of involving the public in the process were tried out;
- the environmental laws that had been recently adopted were expected to prove effective.

I would like to emphasize the fact that my presentation should be not be interpreted as either support for, or opposition to, incineration as destruction technology, but as an example of public participation in the decision-making process in an effort to ensure environmental safety.

2. The gist of the matter

- In 1985, Basel chemical facilities proposed using incineration technology to destroy highly toxic industrial waste. The proposed construction site was located in a highly populated district of the city. Authorities interested in using incineration technology to destroy domestic garbage approved the concept.
- During the period from November 1985 until February 1986, the concept was presented to the public for discussion.
- Opposition to the incinerator began forming as of June 1986.
- On 1 November 1986, a tremendous fire broke out at the Sandoz chemical warehouse in Schweizerhalle, near Basel. The fire created tension for hundreds of thousands of people until low toxicity rates were confirmed; however, all the flora and fauna in several Rhine areas was destroyed. The shock from this disaster created significant concern among the population, who began to worry that the chemical industry posed a real threat to them. As a result, an association was

established. Its main objective was the "accumulation, analysis and review of information and data related to technologies jeopardizing lives and population safety".

- The first set of information detailing damages to the environment arrived from the Ciba-Geigy facility, and was criticized for bias and incompleteness. The Appendix to the report was kept secret and was published only after severe criticism from the mass media. The Ciba-Geigy company, and the government made apologies for having classified the information.
- 820 negative comments related to the incinerator design resulted in the development of a list that included 52 additional comments to the final report on damage caused to the environment.
- On 19 June 1989 the first hearings of semi-public experts were held and included 120 participants. The hearings lasted for 5 hours. A supervisory committee was established to oversee activities connected with the incinerator.
- The supporters and opponents of the plan organized several presentations and press conferences. In the course of this process, several opposition groups altered their strategy from blocking the project to becoming involved in its improvement.
- On 24 July 1991, following the removal of several objections, the concept was finally approved. For its part, Ciba-Geigy volunteered to adopt stricter dioxin release standards and address all of the other objections.

The circumstances, as they evolved from the end of the 80s to the beginning of the 90s, can be divided into three aspects: 1) blackmail, i.e. threat of the industry to leave the region if the incinerator could not be constructed; 2) public opposition; 3) information and public hearings that led to a "social contract" between the parties once a compromise was reached.

3. Baseline positions

3.1. Ciba-Geigy

Ciba-Geigy's main position was as follows: 1) As a result of the incinerator construction, toxic waste will be destroyed by its producers, and 2) The release of pollutants from the incinerator will be much lower than maximum allowable concentrations (MAC).

3.2. Local government

The standpoint of the authorities was similar: 1) Toxic waste will be destroyed by its producers, and 2) The city of Basel approves the plan for the destruction of both industrial waste and domestic garbage.

3.3. Population

Prior to 1 November 1986, the local population had a positive attitude towards the chemical industry, which played one of the most important roles in the city's economic

development for the past one hundred years. However, following the fire in Schweizerhalle, the chemical industry lost much of its credibility.

3.4. Different public groups

- Some criticisms of the Ciba-Geigy incinerator plans addressed the transportation of toxic waste, unknown levels of dioxin and heavy metal contamination in the region, release of the incinerator effluents to the river, dioxin formation during incineration, possible serious accidents, and the fear that Basel would turn into a long-term toxic waste center.
- Other critics pointed out that the proposed plan described only incineration technology and didn't address any other options for the prevention and minimization of toxic waste.
- Opponents insisted that open discussion of all the aspects of the plan be held and that the public be involved in the decision-making process.
- Opponents demanded the creation of a monitoring station supported by other than the chemical industry and the government.
- And finally, some groups rejected the plan on principle.

4. Several key stages in the conflict resolution process

4.1. General comments

- The first key component of the conflict resolution was willingness on behalf of Ciba-Geigy and the local authorities to interact with the population and opponents. 50 informational meetings were held and participated in by the public, political parties, labor unions, etc. 20 direct discussions were held between the opponents.
- The second component involved the development of new public outreach approaches, to be implemented in addition to regular information dissemination, including public hearings and the establishment of public committees (see next section).
- Even after the incineration began operation, Ciba-Geigy continued to keep the population informed by issuing periodic fact sheets, and holding meetings and press-secretary briefings.

4.2 Hearings

- The first public hearings dealt with initial presentations of various views. It was noted that there was no clear understanding of the dioxin related problem. The pollution abatement system and the emergency preparedness plans were considered to be inadequate. Ciba-Geigy promised to take these comments into consideration. The arguments were presented at a highly technical level and the Ciba-Geigy representatives often had difficulty in responding to them. Gradually, Ciba-Geigy admitted the fact that its arguments were too technocratic and acknowledged that it was not sufficiently prepared.
- The second public hearings focused on the aspects that were not addressed by existing legislation and the political as well as psychological and social arguments provided by opponents. The following groups participated in the hearings:

- government representatives and experts (10 people)
- Basel district representatives (10 people)
- District environmental committee (15 people)
- Ciba-Geigy representatives (11 people)
- public groups (24 people)
- public representatives and regional political parties (30 people)
- labor unions (8 people)
- industrial associations (5 people)
- adjacent districts (1 person)
- German representatives (government and public groups) (42 people)
- French representatives (2 people)
- mass media (12 people)

The second hearings centered around two major topics: the dioxin-related problem and the lack of public involvement. Although not all the problems were resolved, the hearings contributed to the clarification of the positions. The hearings made people exercise better judgment in finding arguments and caused the representatives of the industry to consider the needs and wishes of the population more seriously.

4.3. Consulting committee

It was considered important to establish the consulting committee simultaneously with the facility start-up. The committee included the following representatives:

- Ciba-Geigy: 2 persons
- industrial association: 1 person
- district environmental committee: 2 persons (1 person was the President of the Committee)
- general public: 2 persons
- environmental organization: 2 persons.

The consulting committee convenes its sessions at least twice a year. It monitors all environment-related aspects of the incinerator operation and provides explanations to the population. It monitors the drafting of annual reports on the incinerator operation and deals with complaints lodged by the surrounding population related to the impact on the environment. Thus, the committee has a right to monitor environment damage caused by the incinerator operationand suggest ways for improvement.

The committee was established on a voluntary basis. There are no regulations governing the activities of this type of organization.

4.4. Information for the mass media and public

Mass media can have a major impact on people who are exposed to information on a given topic for the first time, and who do not yet have any opinion on the subject. People who already have some opinion prefer to select the information that supports

their standpoint. The frequency with which extensive discussions are held on a subject in mass and electronic media can serve as a contributing factor.

Denying Information or the dissemination of false information may in the end lead to extremely negative impressions as the public finds out the truth. Information blackout can only be applied sparingly and only in cases stipulated by law.

High technology projects, such as the destruction of toxic waste, always pose a challenge to journalists. To be able to correctly identify problems, journalists need some basic knowledge. At the same time, a journalist, being a layman, speaks for the population not so much from a technical standpoint, but mostly from a political, social and psychological standpoint.

5. Results

5.1 Ciba-Geigy

- As a result, Ciba-Geigy adopted release standards that are much higher than those allowed in Switzerland.
- The company agreed, of its own accord, to keep the local authorities and the environmental monitoring body informed, through the consulting committee.

5.2 Various public groups

- As a result, the majority of the groups, through the course of the discussions, switched positions from rejecting the toxic waste incinerator, to seeing it ”optimized”
- Some small groups ceased their opposition due to financial problems.

6. Lessons learned

6.1 General comments and accomplishments

- The dispute on the Basel toxic waste incinerator was not only a result of the project itself, but also a result of the loss of credibility suffered by the chemical industry after the fire in Schweizerhalle.
- The public found it insufficient to discuss only technical concepts. Gaining public approval and mitigating the conflict were the other two major goals. Ciba-Geigy gradually changed its informational policy from technical and passive to proactive and preventive. Ciba-Geigy began giving answers to questions before they were raised by the public. The main problem was the fact that the incineration plan had not been discussed publicly in full, but instead was only open to questioning on procedure and minor issues. While the environmental protection groups hoped that discussing the project would help them impact the technological process, Ciba-Geigy saw this process as a new public outreach instrument, a means to resolve the conflict and gain general project approval.
- The process led to extensive discussions of critical issues and served to assure mutual respect of different standpoints, which, in turn, accomplished conflict reduction.

- Conducting the process gradually led to the improvement of the project in general. Both sides demonstrated technical expertise and a high level of interest in getting involved in the process.
- The second phase of the discussions was open and clear. In the long run we were able to sign a social contract related to the incinerator and find a compromise that mostly satisfied the supporters of the incinerator creation. The reasons only one side ended up completely satisfied were the following:

- both sides had different expectations for the discussion results;
- neither side was prepared to compromise;
- the government played an insufficient intermediary role;
- there was a reluctance to lose prestige;
- disagreement of views existed within groups;
- there was a difference in top-priority values among various groups (economy vs. the environment); and
- the existing laws and regulations didn't leave much room for the opponents to influence the process.

As a result, the opposition didn't achieve its goal aimed at preventing the incinerator from being constructed, however, it managed to secure stricter criteria governing its operation.

Ciba-Geigy, a private company, accepted public monitoring of its activities through the consulting committee. In the long run, the industrial culture changed its attitude to showing consideration for public concerns.

6.2 Negatives

- The two opposing groups did not possess equal means and possibilities.
- No agreement for a decision-adopting procedure was achieved. Therefore, the opponents could resort only to judicial and, thus, expensive measures.
- Some groups, including the low-middle class public, were not involved in the process.
- Emotional and non-technical comments were not considered.

Paul Walker, Director, Legacy Program, Global Green USA

THE CHALLENGES OF CWD: THE US PROSPECTS

1. Introduction.

Thank you for giving me this opportunity to address you today in Kurgan. My name is Paul Walker. I am the Director of the Cold War Legacy Program, Global Green USA in Washington. I am also an Ex-Senior Advisor of the Military Service Committee in the

House of Representatives. Therefore, for several years I worked on CW problems as an official congressional representative, as an academician, and as an environmental protection activist.

I first visited Kurgan Region three years ago. I was a member of an US delegation visiting the Shchuch'ye CW stockpile. The presence of thousands of artillery projectiles and missile warheads filled with lethal nerve gas proved that the cold war inventories needed to be destroyed as soon as possible and in a safe manner.

I would like to emphasize the fact that I am wearing three hats today, speaking as: a private resident, the Global Green USA representative, and the representative of the International and Russian Green Cross – organizations we have been cooperating with to arrange the Public Hearings. It is a pleasure to have my Russian, Swiss, and US colleagues here.

2. Cold War Legacy Program, ChemTrust Project

The Global Green USA Program aims at ensuring the safe and environmentally sound destruction of Cold-War-era chemical inventories. We initiated this program together with our colleagues from the Green Cross Russia and Green Cross Switzerland. In the USA itself, about one hundred military bases were closed due to the detection of thousands of contaminated areas. Further use of these lands is virtually impossible.

Chem Trust Project is a part of the Legacy Program. This project aims to assist in the destruction of CW both in Russia and in the US. We are also dealing with the problems concerning radioactive substances, fissile materials, and the destruction of regular arsenals, decontamination, closure and development of military bases, and the associated lands.

As you know, the problems associated with CW stockpiling areas are dealt with at a Federal and at a State level, both in Washington and in Russia. Therefore, we are implementing the projects in Washington, especially in Congress, and in the following 8 stockpiling areas: Alabama, Arkansas, Colorado, Indiana, Kentucky, Maryland, Oregon, and Utah.

The principal goal of the Chem Trust Project is to organize informational conferences and congressional meetings to include Congressmen, management personnel, and various representatives. For example, last year we held a conference on the problems associated with CW destruction with the participation of Army representatives, representatives of federal and local governments, residents, environmentalists, and doctors. Russian representatives attended the conference and addressed the issues related to the destruction of CW in Shchuch'ye and the other six Russian regions.

This year, we are planning to implement two more projects in Washington and Indiana where the VX stockpiles are located. Again, we are inviting our Russian colleagues, including Kurgan Region representatives, to attend the conference. By the way, Indiana State chose to use neutralization technology for the destruction of nerve gas.

This technology is similar to the technology you proposed during the first phase of the Shchuch'ye project implementation.

The programs we implement are always two-party programs. Global Green USA is doing all it can to inform and involve representatives of both US political parties, i.e., Republicans and Democrats. We do not ask that a variety of destruction technologies be used, but rather to ensure a safe and environmentally sound destruction process.

3. Six concluding remarks.

We face a lot of critical problems that have to be addressed in the course of this complicated, costly, and delicate political discussion concerning the destruction of CW in Russia and the US. In a nutshell, I would like to stress the following six issues:

- *Historical Process*. We are the only ones who realize the historical significance of what we are currently doing. This new approach on how to deal with weapons of mass destruction is an historical turning point in the relations between Russia and the US. If this destruction process is a success, it will promote a ban not only on the production process, but it will also result in the destruction of other types of weapons of mass destruction such as nuclear weapons.

- *Mutual Process*. In light of the Cold War and considering the fact that Russia and the US possess 95% of the world's CW, I would like to emphasize that this is an interdependent process. Although both the Russians and USA bilaterally and unilaterally declared their intent to completely destroy their CW stockpiles, this objective can only be accomplished through joint efforts. There will always be Russians and USA who will point to their former adversaries and caution us against dismantling these weapons. These people feel threatened with the possibility of one side or the other not abiding by the agreement made to destroy their CW inventory. The reality is that If we don't destroy our stockpiles together, we can never hope to get rid of them.

- *CWC Critics.* The International Agreement, the CW Convention signed by both Russia and the US in January 1993, is being criticized. The Convention endorses and systematizes the destruction process of these weapons. It also contributes to the mutual process of confiding in one another by providing the international inspectors with access to the stockpiles. As you know, the US Senate, after long and arduous political debates, ratified the Convention on 24 April 1997. Almost half the world has put the Convention into force; however, Russia hasn't signed it yet. We feel it is very important for the Duma to proceed with the ratification process this year in order to officially become part of this significant multilateral process.

- *Clarity and creating a climate of confidence.* Creating a climate of confidence between former adversaries is a key element in the CW destruction process. Moscow and Washington have recently dialogued many times concerning the declared inventories, proving grounds, scientific institutes, and facilities. Everything will become crystal clear and limpid after the ratification process is

completed. Clarity and confidence are also integral parts of the national political process, i.e., people at the federal, regional, and local levels shall be involved in this process. We consider it just as important as clarity and trust at the international level.

- *Involvement in the process.* The decision-making process regarding technology, financing, and planning shall include all the parties concerned. The residents, public health officials, environmentalists, and emergency specialists shall be involved in the process. The past shows us that although the involvement of all interested parties is rather complicated from the very start, it will result in a stable decision-making process at other subsequent stages. This will be the effect of our democratic traditions. We have a saying in the US, "A stitch in time, saves nine." There are Resident's Advisory Committees established in all the CW stockpiling areas; they act as an instrument to assist us with public contact. I suggest that the Kurgan residents establish a similar public body. There is one more point I would like to make.

- *Uniqueness of the storage facility.* The US has eight major stockpiles and one stockpile at the Johnston Atoll in the Pacific Ocean. Russia possesses seven major storage sites in six regions. We discovered that each site is unique in the types of weapons and types of agents stored, stockpiling and destruction risk levels, local and federal policies, destruction cost, geographic location, and climate. Thus, there is no silver bullet available; there is no perfect, universal instrument of resolution to deal with the inventory destruction problem. We must develop unique approaches to deal with every site and, possibly, to deal with every type of weapon. Acknowledging this fact may make the destruction process more difficult; however, it will guarantee a safe and environmentally sound completion of the process.

Thank you for your attention and hospitality both in Kurgan and Shchuch'ye. I would also like to thank the Green Cross Russia for maintaining productive and excellent working conditions during these three days. I have no doubt that there will be many meetings held in the future regarding this problem. With great pleasure, Global Green USA will closely work and interact with you in order to ensure a safe and uncontaminated environment for our children and grandchildren.

Glen Browder, Retired US Congressman, Naval Post-Graduate School

CW DESTRUCTION: A US CONGRESSMAN'S PERSPECTIVE

Good afternoon, ladies and gentlemen!

My name is Glen Browder. I was a US Congressman just six months ago who was quite active in projects aimed at CWD. I was an Alabama County Representative

where one of the storage sites is located. I traveled several times to your country to discuss the problems associated with CWD. I extend my friendship and wish to promote this camaraderie between our countries. I must emphasize once again that we USA appreciate your invitation to participate in these Russian Public Hearings. The US currently faces a plethora of problems besides those associated with CW. Furthermore, let me stress that all the US representatives present here are official US representatives. Since I have retired from Congress, I am not speaking for the US Government. Mr. Paul Walker summarized the CWD Program in detail. However, I would like to draw your attention to two issues.

The US has learned a difficult lesson concerning the resolution of the CWD problem. The US Government didn't judiciously involve the general public in the CWD process, especially at the early stages which included planning and decision-making to resolve the problem. I recommend that you do your best to include your people in the process so that you may act as equal partners despite any major disagreements existing between the two groups. If the process is based on openness and public participation, it will certainly be successful.

Friends, there is one more point I would like to make. The US Congress is very concerned about the slow decision-making process regarding CWD in Russia. Two weeks ago, the US Government adopted a 1998 bill that cuts off expenditures for the Russian demilitarization program. Furthermore, it sets a specific criteria for Russia to be able to receive any 1998 funds for the Program. I would like to read to you an excerpt from that bill:

- The Committee recommends cutting off the financing of 21 million dollars and not appropriating money for the facility's construction. The Committee also recommends adopting a provision to prohibit a mandatory increase of funds for 1998 until the following conditions are satisfied:

- Russia approves the CWD plan so that it may receive funding for this program;

- The US agrees to cover financial contribution expenditures;
- An agreement is reached determining the parties who will provide funding for the creation of the infrastructure and other required structures associated with the CWDF;

- A facility construction site is selected.

I don't know whether or not this bill will become law. However, the House of Representatives has made the decision to back this bill. If we want the CWD process to be a success, and if this success largely depends on US funds, then my role here in Russia is very simple. It is necessary to ratify the CW Convention if Russia is to be successful and make progress in the CWD process. Thank you very much for the opportunity to participate in these hearings. I hope to establish a fruitful and long-term friendship.

Kalinina, N.I., Expert, Office of the RF Government

THE IMPLICATIONS OF THE CWC FOR SOLVING THE CWD PROBLEM IN SHCHUCHYE

The issue of ratification was by no means the subject of these hearings nor was it on the agenda. Therefore, government and public organization representatives at various levels did not focus upon or present any materials on the passage [of the legislation] or on Russia's preparations for the ratification. I would like everyone living in the Kurgan Region, all of the attendees here, and media representatives to be aware that as we speak, Russia is in fact involved in the ratification process. I would like to call your attention to a few points.

The US Congress started the ratification process as soon as the Convention was signed, practically as early as January 1993. Unfortunately, for political and economic reasons, it was not until this past April that the Convention was submitted to State Duma for ratification. Anyone who saw the Convention knows that just reading it would take quite a while, let alone giving it some thought and making decisions. We are roughly talking about 200 pages of small print that contain provisions and articles of major importance for any country that would ratify them, thus fully justifying weighed judgment. However, both the Defense Committee and a few other Duma Committees, which were reviewing the Convention in advance right after it had been submitted for ratification, only brought it forward for Duma's consideration on March 17, while fully aware of the fact that it enters into force on April 29.

It is understood that, even for reasons concerning procedure alone, the Convention could not have been ratified before it entered into force, to say nothing of the need to make a considered decision. Nevertheless, several specialized Committees, several experts and professionals who are well versed in the subject and able to provide a professional assessment of the essence of the document and confirm its importance succeeded in persuading the Federal Assembly to adopt an Address to the First International Conference held in early May in connection with the Convention's entry into force. An Address was forwarded on behalf of the State Duma that outlined the basic reasons for the delayed ratification in Russia. The Address also stated that if the international community meets us halfway in solving the main problems that hamper the ratification so that we would feel the support of the international community for Russia to achieve all the goals of implementation, then the State Duma will revisit the issue of ratification in the fall and may complete the ratification by year's end. The Conference is over; however, the resolution of the International Conference does not include any formal decisions with regard to the Duma's Address and the issues raised therein. Nevertheless, at meetings and consultations, various countries expressed understanding and support, even though this did not result in a formal document being adopted. What was there in the Address that still presents an obstacle to the Convention's ratification? Things that worry you and us alike.

First, the cost of implementing the Convention in terms of money. This is a very costly, very big measure. It will exert a significant pressure on the budget, which is what makes us consider and reconsider the feasibility of implementing the Convention's provisions, within the specified period, i.e., 10 years. Even if the international community decides to extend the implementation period for another 5 years, which is a real possibility, we will still have to thoroughly consider whether it is feasible for us to comply with these terms even within 15 years.

The second point is also economy-related. So far, under the Convention, the cost of international compliance inspections (and there are quite a few types of inspections involved) must be borne by the host party. That is to say, apart from the heavy financial burden that should be expected over the next ten years, Russia is called for to bear large expenses covering the inspection activities.

The third point is also economic in nature, and of essential importance to our industry. Under the terms of the Convention, former chemical weapons production facilities are practically subject to destruction. It is a fact of our history, a reality of our chemical industry that every chemical weapons production facility is part and parcel of chemical complex, an integral part of technological structure with which they share common utility lines. Therefore, destroying these facilities that are parts of chemical complexes would practically mean shutting down these complexes. This is something we cannot afford at this time. This is too costly and inefficient for our economy. Thus, if we discuss whether the Convention should or should not be ratified, then no one questions the necessity of ratifying the Convention. Indeed, it has to be ratified as soon as possible, because the clock is already running even though Russia has not ratified the Convention. Such a decision must be underpinned and substantiated by financial and economic calculations regarding the feasibility for Russia to comply with the Convention's terms. It must be supported by definite intents, not to say assurances, that are fairly objectively expressed, on the part of the international community to come through on its promises to support the implementation of the CWD program. Finally, this will have to be done in the fall when all the deputies are back and the budget issue will be finalized. As you know, the issue of budget sequestration is being currently discussed, that is, cutting down even the meager pennies that were allocated to this line item. The allocations of the 1996 budget constituted just 15 of the required amounts. If we see this trend continue, it will take a joint effort on the part of Heads of Regional Administrations, the international community, as well as determining some realistic ways of financing the project in order to resolve the issue of ratification.

Michael Lesnick, Keystone Center, Colorado, USA

ENVIRONMENT CLEANUP ASSISTANCE

Thank you very much for giving me the floor. Good afternoon, ladies and gentlemen, Russian, Swiss and US colleagues!

My name is Michael Lesnick. I am Vice-President of the Keystone Center. I would like to express my gratitude to the organizers of the Public Hearings for giving me the opportunity to participate and share some of my ideas with you. I would also like to thank our Kurgan and Shchuch'ye hosts for their generous hospitality and warm reception.

The organization I work for is a non-governmental organization with headquarters in the state of Colorado. It has held a neutral position for the 22 years of its existence, playing an intermediary role, assisting governmental organizations, public groups, private organizations and scientists in developing compromises to environmental problems both in the US and on an international level. We are dealing with many issues from environmental safety during the nuclear weapons production process to the planet's climate change. On Tuesday, Kevin Flamm, Director of the US Program, described some aspects of the CWD Program developed in the US, overviewing the technology being developed and utilized. In addition, he described public participation in the resolution of the problem. Now I would like to focus briefly on one of the processes of public participation initiated within the framework of the Program. This process is connected with the recent steps taken by the US Congress in 1997. The US Congress allocated $40 million to the DoD to develop, over the course of 2 years, a program for development and testing of at least 2 CWD technologies, alternatives to incineration baseline technology. DoD widely uses constructive dialogue as part of this aspect of the program; based on a federal compromise in the US, 40 participants are involved in this process. This dialogue on the CW problem includes residents of the CW storage site areas, federal environmental organizations and DoD personnel. This dialogue goes back to three days in May 1997 when three meetings were held in the CW stockpiling areas of different US regions. All interested people could attend and make presentations at these meetings. Due to the short amount of time provided for this effort, attention focused on three major issues. The first issue deals with developing a compromise or finding a consensus for assisting DoD in the selection of technologies to be used and tested. The second issue deals with location of pilot units for conducting tests. The third issue relates to the technology evaluation criteria. On 2 July in Maryland, a group of people conducting this dialogue reached an agreement on the technology evaluation criteria. A dialogue that is a part of this two-year program is a vivid example of how various organizations and groups pursuing different interests can cooperate in the CW problem resolution. If you need additional information, you are welcome to contact Kevin Flamm or his colleagues. I would like to thank you once again for giving me an opportunity to participate in these Hearings.

Arnold Reitze, George Washington University, Washington, DC, USA

THE ROLE OF ENVIRONMENTAL LAW AND EXPERT ADVISORY GROUPS IN CLEANUP PROCESSES

My name is Arnold Reitze. I am a professor of law at George Washington University. I don't represent the US Government point of view. I am speaking as a resident who has been a lawyer working on environmental problems for 30 years. For several years, I have been a member of the CW Inventory Committee at the National Academy of Sciences. This was the first non-governmental committee, dealing with the evaluation of CWD technology, that included lawyers and experts. You might be interested in some achievements made in the last 25 years, in environmental law, that allowed us to make the CWD process safer.

First of all, we use the services of the agencies that develop and implement the environmental laws. These agencies don't have anything to do with CW, as they are environmental protection agencies.

Secondly, we have no objections to the states setting up stricter requirements. The requirements set by states shall be observed by both the federal and state authorities. When proposing their requirements, states shall take into account existing federal norms; however, they have the right to come up with additional requirements.

Thirdly, the local authorities of any state have the right to set their own requirements to be observed at federal facilities. Therefore, if the federal norms don't consider local interests, additional requirements may be set up.

Fourth, all US environmental laws include provisions for the legislative power of residents. These allow them to bring the federal government to court for non-compliance with the norms.

Such provisions contribute to giving all residents confidence that the environment will be protected.

In conclusion I would like to thank you for giving me this opportunity to make a presentation. I hope the CWD process will be a success. And I would like to thank our hosts for their hospitality and warm reception during my first trip to Russia.

3. STAND REPORTS, COMMUNICATIONS AND MESSAGES

3.1. Kelvin Flamm, Project Manager «USA Program» - Cooperative Threat Reduction

3.1.1. «General provisions of the chemical demilitarization program»
3.1.2. «General provisions of the program for promoting CW Destruction within the program « Cooperative Threat Reduction »
3.1.3. «Legislative basis review»
3.1.4. «Federal laws in the field of environmental protection»
3.1.5. «Public relations and CW stockpiles disposal program»
3.1.6. «Survey of CW disposal programs»
3.1.7. «How CW will be destroyed?»
3.1.8. «Testing of alternative CW demilitarization processes on experimental and demonstration ground»
3.1.9. «Neutralization»
3.1.10. «Neutralization with subsequent biodegradation»
3.1.11. «Instruction and Training Center for CW disposal»
3.1.12. «Johnston Atoll CA Disposal Facility»
3.1.13. «Tooele CA Disposal Facility»

3.2. Poryadin A.F., First Deputy of Chairman of the State Committee for Environmental Protection of the Russian Federation

Kutsenko V.V., Head of Environmental Safety Administration of the State Committee for Environmental Protection of the Russian Federation. «Report of the State Environmental Commission of Russia at the Public Hearings concerning CW disposal in Kurgan Region».

3.3. Mazein A.G., Head of Kurgan Region Social Security Administration «Problem of social security of population living in zone of storage and proposed CW disposal»

3.4. Kokushkin A. Chief of the Epidemiological Department of the Russian Scientific and Research Antiplague Institute «Microbe»;

Grozdova T. Chief Specialist of the Ministry of Public Health, Saratov region «Epidemiological analysis of the structure and dynamics of population morbidity in Shchuch'ye Area, Kurgan Region»

3.5. Pankratov V. Chief Specialist of the Penza Region Administration «On problem of chemical demilitarization in the Penza region»

3.6. Grozdova T. Chief Specialist of the Ministry of Public Health, Saratov region «Report on medical expertise of health of civil population residing near CW stockpiling and disposal grounds».

3.7. Scientific, Research and Design Institute of Radio Electronic Engineering of the State Enterprise «SNPO ELEKTRON» (NIKIRET Ministry of Nuclear Engineering of the Russian Federation, Penza):

3.7.1. «Provision of efficient physical protection of facilities for CW storage and disposal»

3.7.2. «Security systems: research, production, design work, erection, adjustment, commissioning and maintenance».

4. LIST OF ABBREVIATIONS

CW - Chemical Weapons;
CWD - CW Destruction;
CA - Chemical Agent;
WCA - Warfare Chemical Agent;
OCA - Organophosphorus Chemical Agent;
PCA - Persistent Chemical Agent;
NCA - Nonpersistent Chemical Agent;
CWDF- CW Destruction Facility;
CWBA - CW Ban Agency;
CWC -CW Convention;
MAC - Maximum Allowed Concentration;
EER - Environmental Expert Review;
PEER - Public Environmental Expert Review;
SEER - State Environmental Expert Review;
EIA - Environmental Impact Assessment;
TAL - Tentative Allowable Level;
TSEL - Tentatively Safe Effects Level;
RF MOD RCBDCOM - Radiation, Chemical and Bacteriological Prohibition Administration, Ministry of Defense, Russian federation;
MAHO MOD RF - Missile Artillery Head Office, Ministry of Defense, Russian federation.

INFORMATION ANALYTICAL CENTERS

Centers for Civil Population Awareness in CW Disposal Problems

PROBLEMS OF AND SOLUTIONS FOR SAFE STOCKPILING AND DISPOSAL OF CHEMICAL WEAPON

Purpose of the centers

- To study and analyze public opinion on the safe stockpiling and disposal of chemical weapon;
- To gather, systematize and analyze Mass Media information on CW stockpiling and disposal problems
- To carry out environmental, socio-economic and medical monitoring and analytical control in the region of stockpiling and disposal of live chemical agents
- To ensure a rapid information support for civil population on problems and solution related to safe storage and disposal of chemical weapon
- To ensure participation of civil population in public expertise of projects designed to ensure environmental safety, safe storage and disposal of chemical weapon
- To set forth issues associated with assessing potentially hazardous facilities and establishing a rigid function protection of civil population living in a hazardous zone
- To provide information to Mass Media, state-run agencies, public movements and information networks.

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INFORMATION FOR:

- representatives of the public and residents, first of all to population living in regions where CW is stockpiled and disposed;
- local government agencies, governmental agencies, departments and organizations providing control over and safety for vital activity in Kurgan Region area;
- all kinds of mass media ensuring efficient and unbiased information support for civil population on problems associated with provision of safe storage and disposal of chemical weapon;
- experts carrying out public expertise of designs for CW storage and disposal;
- scientists and specialist dealing with various issues related to environmental, social, economic and medical control in regions where CW is stored and disposed.